

**Ingersoll-Rand Company**  
Woodcliff Lake, New Jersey

## Baseline Ecological Evaluation

Ingersoll-Rand Facility  
Phillipsburg, New Jersey

Text and Appendices



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## 1.0 INTRODUCTION

A Baseline Ecological Evaluation (BEE) was conducted by ENSR on behalf of Ingersoll-Rand Company (IR) at the IR property, located at 942 Memorial Parkway, Warren County, Phillipsburg, New Jersey. The BEE was conducted in accordance with the New Jersey Department of Environmental Protection (NJDEP) Site Remediation Program's Technical Requirements for Site Remediation (N.J.A.C. 7:26E). The IR property, hereafter is referred to as the "Site" and shown on Figure 1. Presently, IR is exploring options for the redevelopment and/or sale of the property.

The BEE is part of a tiered approach to ecological risk assessment and is conducted by qualified individuals using qualitative screening techniques. The guidance for conducting BEEs (NJDEP, 1997) provides methods to define Contaminants of Potential Ecological Concern (COPECs) and Environmentally Sensitive Areas (ESAs), and to assess potential contaminant migration pathways. The results of the BEE are then used to assess whether a comprehensive ecological assessment under N.J.A.C. 7:26E-4.7 is needed.

Prior to conducting Site visits, general environmental information on the Site vicinity was obtained from existing reports and NJDEP Geographic Information System (GIS) database. ENSR conducted Site visits on July 12 and 20, 2004 to document Site flora and fauna, to assess potential contaminant migration pathways from previously identified grouped Areas of Concern (AOCs), and to determine whether these migration pathways could transport COPECs to ESAs. Photographs were taken during the Site visit to document the natural resources at the Site and adjacent areas and are included as Appendix A.

A BEE for the south-side area of the facility was completed in July 2002. Although, this BEE includes the entire IR property, specific AOCs described in the July 2002 are not repeated in this report. A complete copy of the South-Side BEE is located in Appendix C.

For the purposes of this Baseline Ecological Evaluation, Areas of Concern were divided by soils and groundwater and then grouped by location into Sections (i.e. Section 2A). Sections of soil AOCs were group by location, groundcover and potential mitigation pathways. For example, the specific AOCs located in Section 2A are in the same relative area and are covered by maintained lawn or pavement ; therefore resulting in similar potential mitigation pathways. Groundwater is evaluated as two AOCs: a light non-aqueous phase liquid (LNAPL) and a dissolved phase. The specific AOCs referenced are detailed in ENSR's Soil Remedial Investigation Report (draft July 2004). Table 1 summarizes the Sections of AOCs including contaminants identified in excess of Most Stringent Cleanup Criteria (MSSCC) and location. Figure 2 depicts the site plan and drainage. Figure 3 maps the Sections of combined AOCs.

## **1.1 Background and History**

### **1.1.1 General History**

As shown in Figure 1, the entire IR property encompasses a total of 385 acres within the Town of Phillipsburg and Lopatcong Township, New Jersey. The facility history dates back to the early 1900s when initial construction began. Since its construction, portions of the property have been used for manufacturing and related operations, agriculture, and landfilling, with some portions of the property having been left unimproved. Currently, the property is developed with manufacturing and related buildings, roads and parking areas, landscaped areas, and agricultural fields. Sections of the property are forested and/or overgrown fields including a former company baseball field. Finally, two large landfill areas are present just south of the main facility area, one of which was closed in 1981 and one of which remains active. A Site Plan including the boundaries of the Site is included as Figure 2.

Manufacturing operations have generally remained centralized in the northwest quadrant of the property. During the height of operations, the facility employed almost 6,000 employees and produced several major product lines including pumping equipment, mining equipment, turbo equipment, air and gas compressors, and rock drilling equipment. Iron and steel foundries located on the property supported these operations. Buildings were both built and demolished to meet varying production needs over the facility history. Due to a later restructuring and the resulting formation of the Ingersoll-Dresser Pump Company joint venture, all of the divisions other than the manufactured pump division were removed from the property including the Cameron Pump Division which was formerly located on the Site. Recently, Ingersoll-Dresser Pump operations were acquired by Flowserve Corporation, who continues pump manufacturing operations in the northern portion of the property.

Agricultural operations have been present on the eastern and southern portions of the Site with operations leased to local farmers. Landfill operations occurred just south of the main plant in the "Old Landfill" and the "New Landfill". The Old Landfill received mainly foundry sand and construction debris as well as various plant waste materials until its closure in 1981. The New Landfill, present to the west of the Old Landfill, remains active for disposal of foundry sand and construction debris, although nothing has been disposed there for several years.

The facility has been actively engaged in remediation since 1986 and has been under NJDEP oversight under an Administrative Consent Order since 1994.

### **1.1.2 Site Operational History**

In 1903, IR began construction of an industrial complex that would, at the peak of its operations, include approximately 2 million square feet of office, manufacturing, iron and steel foundry, and storage space. Since the 1970's, as a result of changing technology and corporate reorganization, operations have declined. In the early 1980's the drill division was moved to Roanoke, VA. In the mid

1980's IR joint ventured with Dresser Corp and moved the turbine (turbo/compressor) division to Olean, NY. In the late 1980's the iron foundry closed, and only the pump division remained.

In 1987, Ingersoll-Rand joint ventured with Dresser Pump Co. to continue the remaining operation, Cameron Pump Division, on Site. This joint venture functioned as Ingersoll-Dresser Pump. At that time the plant had been consolidated down to approximately 920,000 square feet of functional space and less than 1,000 employees. The Cameron Pump Division structures that were located at Green Street and Center Street in the southwest portion of the Site were torn down in 1990.

Landfilling operations took place just to the east of the former Cameron Pump facility. Portions of the Site have been used for agricultural purposes or left unimproved. A Site Plan is provided as Figure 2. A more detailed historical account will be included in a forthcoming Site History Report.

## **1.2 Site Description**

As shown on the USGS 7.5-minute Quadrangle Map for Easton PA-NJ (Figure 1), the Site is situated at the top of a ridge at approximately 360 feet above mean sea level (AMSL). Topographic elevation decreases in all directions but is most evident toward the southeast. On-site land use consists of agriculture, landfill operations, current and former manufacturing areas, and forested upland areas. An abandoned company baseball field is also present toward the southwest corner of the Site. Treated wastewater and storm water are discharged via an intermittent ditch is located within the central portion of the Site. The ditch runs southwest approximately 2,100 feet to its confluence with Lopatcong Creek, which flows southwest along the eastern edge of the Site toward the Delaware River. There is a stormwater retention pond located in the northwest corner of the Site. The area surrounding the Site is of mixed commercial, residential, and agricultural use. Eastward, the Site is bounded by Route 22. Some commercial development is evident along Route 22, but beyond those businesses, agricultural activities persist. Lock Street and some residential development largely bound the southern portion of the Site. Land use beyond Lock Street appears as mixed agricultural and wooded. A railroad right of way and Route 22 bound the northern portion of the Site. In this area, Route 22 is heavily developed with commercial and residential structures. The western boundary of the Site at Roseberry Street is largely residential with some commercial development.

## **1.3 Topography and Drainage**

General topography at the Site ranges from gently to steeply sloping as the property is situated on the top of a ridge extending from the north-northwest. At the Site, topography begins to slope steeply to the west and south and moderately to the east.

The facility buildings are present at an approximately elevation of 360 ft AMSL with the lowest elevations at the Site nearing 225 ft AMSL. The facility area is generally level and slopes off steeply towards Roseberry Street on the west side and towards the eastern farm fields. Historically,

topography sloped more gently to the south. However, filling activities associated with the current and former landfills have changed topography in this area to a much steeper slope at the southern edges of the landfills. Beyond the landfills, the Site slopes gently to moderately to the Lopatcong Creek, which is present at an elevation of approximately 230 ft AMSL.

Surface runoff in the plant area, on paved (impervious) surfaces, is collected in a stormwater sewer network, which drains the western portion of the Site into the Stormwater Retention Basin and the eastern portion of the Site into the Spray Pond and Inverse Ponds. Much of the stormwater that falls on the remaining permeable surfaces (agricultural fields, lawns, etc.) likely infiltrates to the subsurface.

#### **1.4 Field Observations – July 12 and 20, 2004**

ENSR conducted Site visits during July 12 and 20, 2004 to complete the BEE. During each Site visit, ENSR personnel reviewed typical vegetation and wildlife to field-confirm the presence or absence of any threatened or endangered species, corresponding critical wildlife habitat, identified environmentally sensitive areas, and reviewed AOCs to assess the potential for contaminant migration to identified ESAs. The next subsections discuss specific observations made during the Site visits regarding vegetation and wildlife while the following Sections discuss identified ESAs (Section 2.0), COPECs (Section 3.0), and migration pathways (Section 4.0). Flora, Fauna, Critical habitat, ESAs and COPECs for the southern portion of the Site are referenced from the July 2003 South-Side BEE (Appendix C).

##### **1.4.1 Site Vegetation**

Field observations (July 2004) indicate that vegetation within the Site ranges from maintained lawns, open fields and early successional forests. Maintained lawns are present in the northern and western portions of the Site. Ornamental trees including red maple (*Quercus rubra*), Eastern white pine (*Pinus strobus*) and black birch (*Betula lenta*) are also present in these areas. The western and central portions of the Site have concrete foundations of former buildings or are filled. Vegetation that prefers disturbed areas is growing through areas of concrete and fill. This includes tree-of-heaven (*Ailanthus altissima*), wild bergamot (*Monarda fistulosa*), Queen Anne's Lace (*Daucus carota*), Virginia creeper (*Parthenocissus quinquefolia*), crown vetch (*Coronilla varia*), moss phlox (*Phlox subulata*), yellow foxtail (*Seteria glauca*), goldenrod species, various sedges and grasses. Early successional forests are present in the northwest corner and southern portion of the Site. Typical overstory vegetation in this area consists of black cherry (*Prunus serotina*), tree-of-heaven (*Ailanthus altissima*), American sycamore (*Platanus occidentalis*), big tooth aspen (*Populus tremuloides*), staghorn sumac (*Rhus typhina*), and silver maple (*Acer saccharium*), with various herbaceous vegetation including crab grass (*Digitaria* sp.), perennial ryegrass (*Lolium perenne*), and goldenrod (*Solidago* sp.). The southwestern portion of the Site is cultivated for corn. There did not appear to be any stressed vegetation on the Site.

Table 2 presents a list of vegetation observed at the Site during the July 2004 Site inspections. Additional vegetation noted for the southern side of the facility is detailed in the July 2003 BEE (Appendix C).

#### **1.4.2 Site Wildlife**

Wildlife observed during the Site visits of July 2004 included various birds as well as mammals. Abundant bird species observed within the Site include Canada goose (*Branta canadensis*), wild turkey (*Meleagris gallopavo*), Great blue heron (*Ardea herodias*), American robin (*Turdus migratorius*), Northern mockingbird (*Mimus polyglottos*), common grackle (*Quiscalus quiscula*), American crow (*Corvus brachyrhynchos*), barn swallow (*Hirundo fulva*) and gray catbird (*Dumetella carolinensis*). Mammals present include woodchuck (*Marmota monax*) and white-tailed deer (*Odocoileus virginianus*). Green frog (*Rana clamitans melanota*) was heard calling from an inverse pond located in Grid 7.

Table 3 presents a complete list of the wildlife species observed at the Site. Additional wildlife noted for the southern side of the facility is detailed in the July 2003 BEE (Appendix C).

#### **1.5 Sections of AOCs**

Several groundwater and soil quality environmental investigations have been conducted at the Site since 1986 including ENSR's Draft July 2004 Soil Remedial Investigation Report (RIR), Draft July 2004 Groundwater Report, May 2001 RIR, and January 2002 RIR Addendum, and October 1996 UST Closure and Site Investigation Report. From these previous investigations, recognized or potential AOCs were identified. AOCs are detailed in Table 1.

##### **1.5.1 Section 2A**

Section 2A contains those AOCs located north of Buildings 17A and 17B (Figure 3). The AOCs included in this Section are the former chip storage areas of AOCs 3E and 3F, three round concrete tanks of AOC 4, a former incinerator of AOC 33 and part of the former drill manufacturing building of AOC 16. A No Further Action (NFA) has been granted by the NJDEP (January 23, 1997) for AOC 4.

Section 2A consists mainly of maintained lawn with ornamental trees including red oak (*Quercus rubra*) with portions paved over for roads and walkways. A small area just north of Building 17A contains vegetation typical of disturbed areas including tree-of-heaven (*Ailanthus altissima*) and wild bergamot (*Monarda fistulosa*). Section 2A is approximately 450-feet (along the north-south axis) by 600-feet wide.

### **1.5.2 Section 2B**

Section 2B includes the footprint of Buildings 17A and 17B, the parking lot between them and the area east of Building 17B (Figure 3). This Section contains the majority of the former drill manufacturing building of AOC 16, former chip storage area of AOC 3E, and two 10,000 gallon underground storage tanks (USTs) of AOC 25. A NFA has been granted by the NJDEP (October 18, 1994) for AOC 25. The surface of Section 2B is covered by buildings or concrete parking lot with islands of ornamental trees including red oak and Eastern white pine (*Pinus strobus*). Section 2B is approximately 550-feet (along the North-south axis) by 700-feet wide.

### **1.5.3 Section 5**

Section 5 includes a former iron foundry of AOC 17 and two former unlined lagoons of AOC 32 (Figure 3). The area east and south of Buildings 1, 2, 2A, 33 and 106 (AOC 17) consist of maintained lawn and various carex sedges. The surface runoff from this area (shown in Photo 7) flows to the east. Portions of this area pool water and attract geese, which were observed wading during the field observations. Eastern white pine, black birch (*Betula lenta*), tree-of-heaven and areas of maintained lawn are present west of Building 106. This area slopes steeply to the west toward another portion of Section 5. This area of Section 5 (AOC 32) contains two unlined man-made lagoons. A NFA was granted by the NJDEP (March 28, 1995) for AOC 32. Additional vegetation present include moss phlox (*Phlox subulata*), various goldenrod species (*Solidago sp.*), wild bergamot, sycamore (*Platanus occidentalis*) and northern catalpa (*Catalpa speciosa*). Section 5 is approximately 1,500-feet (along the north-south axis) by 1,000-feet wide.

### **1.5.4 Section 6A**

Section 6A is a paved area surrounded by Buildings 7, 8, 12, 13, 15, 16, and 19 (Figure 3). This section contains a former heat treat building (AOC 10), former 10,000 gallon methanol UST (AOC 11), two former 10,000 gallon quench oil USTs (AOC 12), 500 Gallon Gasoline UST (AOCs 13 and 14), two former 1000 gallon diesel and lube oil USTs (AOC 15), 5000 gallon waste oil tank (AOC 20), 2000 gallon process tank (AOC 24) and a concrete structure (AOC 40). A NFA was conditionally granted to AOC 10 in an August 2, 2000 letter from the NJDEP. NFAs were granted to AOCs 11, 13, 14, 15, 20 and 24 by the NJDEP in letters dated October 18, 1994, August 2, 2000, and January 23, 1997. A NFA was requested for AOC 40 in a letter to the NJDEP dated October 1999, as no exceedances are present. Sparse disturbed vegetation is growing through areas of concrete. Section 6A is approximately 380-feet (along the north-south axis) by 150-feet wide.

### **1.5.5 Section 6B**

Section 6B is a paved area on the eastern extent of Building 12 (Figure 3). This section contains a former transformer (AOC 1), a 10,000 gallon diesel UST (AOC 9), 1,500 gallon waste oil tank (AOC



19), hazardous waste storage shed (AOC 27), Ultrafilter in Building #12 (AOC 28) and 1,000 gallon diesel UST (AOC 35). NFAs for AOCs 9, 27, 28 and 35 was granted by the NJDEP in letters dated October 18, 1994, January 23, 1997 and April 11, 2000. A small area has grass is growing through concrete on the eastern side of building 12 (Photo 12). Section 6B is approximately 100-feet (along the north-south axis) by 100-feet wide.

#### **1.5.6 Section 6C**

Section 6C is a large area approximately 1000-feet (along the north-south axis) by 1000-feet wide (Figure 3). Section 6C includes the northern portion of the old landfill (AOC 29), former incinerators (AOC 23 and 34), spray pond (AOC 30), spray pond sludge disposal area (AOC 2), 600 gallon "Brill Skimmer" AST (AOC 22), and two inverse ponds (AOC 31). A NFA was granted by the NJDEP to AOC 22 in a letter dated March 25, 1995.

Concrete and fill cover the surface of Section 6C. Vegetation is growing through both areas and consists of wild bergamot (*Monarda fistulosa*), Queen Anne's Lace (*Daucus carota*), tree-of-heaven (*Ailanthus altissima*), Honeysuckle (*Lonicera sp.*), crown vetch (*Coronilla varia*), and yellow foxtail (*Setaria glauca*). The spray pond, inverse ponds and northern portion of the discharge ditch are also located within Section 6C.

A presence/absence Letter of Interpretation (LOI) is scheduled for submittal for the NJDEP Land Use Regulation Program for the Site. The LOI request a non-jurisdictional determination for the spray pond and two inverse ponds as these were not constructed on historically wet areas and have concrete bottoms.

The southern portion on the old landfill and discharge ditch present in Section 6C were analyzed in the July 2002 Baseline Ecological Evaluation of the South-Side Area Ingersoll-Rand Facility and will not be further discussed within this report. A complete copy of the 2002 BEE is located in Appendix C. NFA was conditionally granted for the southern portion of the Old Landfill (AOC 29) by the NJDEP in a letter dated September 10, 2002. ENSR expects to request NFA Investigation for the remaining portion of the landfill that extends north of Loop Road in the forthcoming Soil RIR.

#### **1.5.7 Section 6D**

Section 6D is located near Buildings 9, 10, and 11. This area contains former chip pads (AOC 3C and 3D) a 1,750 gallon waste coolant AST (AOC 21), and scrap pad (AOC 39). NFA was granted to AOC 21 by NJDEP in a letter dated October 18, 1994.

Section 6D is approximately 550-feet (along the north-south axis) by 600-feet wide. Concrete and fill also cover the majority of the surface with vegetation pushing through broken concrete. Plants

growing in this area include Virginia creeper (*Parthenocissus quinquefolia*), wild bergamot (*Monarda fistulosa*), and various sedges.

#### **1.5.8 Section 7**

Section 7 is maintained lawn and pavement near Building 104. This area contains contaminated soil piles (AOC 5), three fuel oil USTs (AOC 7), buried fuel oil pipelines (AOC 38) and oil/water separator and building (AOC 41). NFA was granted to AOCs 7 and 38 by the NJDEP in a letters dated January 23, 1997 and April 11, 2000. Section 7 is approximately 600-feet (along the north-south axis) by 700-feet wide.

#### **1.5.9 Groundwater**

Groundwater investigations at the Site began voluntarily by Ingersoll-Rand as early as the mid-1970s when LNAPL was discovered on the groundwater table. Subsequent investigation identified a plume of floating product at the Site and a chlorinated volatile organic compound (VOC) impact. A detailed background of investigative activities was provided in the 1994 Draft Remedial Investigation Workplan (Tellus) and modified by the November 2002 Groundwater Remedial Investigation Report. Groundwater elevation averages approximately 270 ft AMSL with maximum elevation at RW-11 at approximately 300 ft AMSL and an approximate minimum elevation at MW-37 around 230 ft AMSL. Groundwater monitoring wells are located across the entire Site, through out the plant and the surrounding farmland are shown on Figure 4.

## **2.0 ENVIRONMENTALLY SENSITIVE AREAS (ESAS)**

In accordance with N.J.A.C. 7:26E-3.11, Environmentally Sensitive Areas (ESAs) are to be identified as part of the BEE. Identification of ESAs was conducted in accordance with the ESA Guidance Document (NJDEP, 1996). According the ESA Guidance Document the following are considered ESAs, but not located on or within 0.5-mile of the Site:

- Bay islands,
- Barrier island corridors,
- Beaches,
- Dunes,
- Breeding areas for forest nesting birds, colonial water birds or aquatic furbearers,
- Wintering areas (including coastal tidal marshes and water areas), waterfowl concentration areas, Atlantic white cedar stands,
- Prime fishing areas,
- Estuarine areas,
- Shellfish harvesting areas,
- Pristine forest areas, and
- Federal and State-listed wilderness areas
- Wild and Scenic River

Table 4 summarizes the results of the ESA investigation and identified ESAs are shown on Figure 3. The following presents a discussion of those areas that were identified as ESAs or potential ESAs.

### **2.1 Surface Water**

A portion of Lopatcong Creek is located just southwest of the Site boundary. Lopatcong Creek, as shown in photographs in Appendix A, is a small stream that runs through the southeastern portion of the Site on its way to the Delaware River. Lopatcong Creek is a Category 1 waterway as determined by the NJDEP and is considered an ESA for the purposes of this BEE.

Delaware River is located over 0.5 miles southwest of the Site; however, it is considered an ESA due to groundwater flow. Figure 1 depicts the relative location of the Delaware River to the Site.

The drainage ditch is a manmade ditch that serves as the discharge culvert from the Inverse Ponds to Lopatcong Creek. Discharge water is monitored under NJPDES Permit No. 0004049. Often, due to lack of discharge, the ditch is dry or partially dry and does not meet the definition of surface water in N.J.A.C.7.7E-4.1. Therefore, the ditch is not considered as surface water for purposes of this BEE.

Upper and Lower Inverse Ponds, which are located on Site were investigated by a qualified ENSR

wetland scientist during a wetland delineation in June 2003. Because the Spray Pond and Inverse Ponds and associated ditches are located in uplands and are man-made features used for the conveyance and treatment of wastewater and stormwater, ENSR requested a non-jurisdictional determination from NJDEP for these water features. No determination from the NJDEP has been received to date. These areas are not considered environmentally sensitive areas. Mitigation pathways (surface water and soil) was addressed in the south-side BEE (Appendix C). The south-side BEE concluded that no evidence of a completed pathway between AOC contaminants and Lopatcong Creek. Potential for a complete pathway for groundwater contaminants is addressed in Section 4.

## **2.2 Sources of Water Supply**

Public Community Water Supply wells are mapped by the New Jersey Geologic Survey and readily accessibly via Geographic Information Systems (GIS) through the NJDEP. This database was last updated March 24, 2004. No public community water supply wells are located on the Site or within 0.5-mile. The closest well is located approximately 1.2 miles southwest of the southern extent of the property boundary.

A well search was conducted in 2002 and reported in the November 2002 GW RIR. Based on the locations of the wells the coordinates appear to be in correct. At this time some locations have been modified and/or verified, but the search has not been completed.

## **2.3 Wetlands**

During June 2003 Wetland Delineation, Wetland W-WA-001 was mapped. This wetland is a narrow, palustrine, emergent (PEM) wetland, located at the lowest elevation in the northwest corner of the Site. The wetland is dominated by hydrophytic herbaceous species such as purple loosestrife (*Lythrum salicaria*, FACW+) and broad-leaved cattail (*Typha latifolia*, OBL). Subdominants include eastern cottonwood saplings (*Populus deltoides*, FAC) and jewelweed (*Impatiens capensis*, FACW).

A presence/absence Letter of Interpretation (LOI) is scheduled for submittal for the NJDEP Land Use Regulation Program for the Site.

Wetland W-WA-001 has formed in a man-made detention pond that was designed to treat stormwater runoff. The wetland exhibits characteristics of a disturbed wetland potentially having an ordinary resource classification. This wetland is not considered an Environmentally Sensitive Area.

## 2.4 Rare, Threatened, and Endangered Species – Fauna

Inquiries were made to the New Jersey Natural Heritage Program (NHP) and the U.S. Fish and Wildlife Service (USFWS) regarding the potential presence of threatened or endangered species (June 2004). The response letter from the NHP, dated July 1, 2004, indicated habitat mapping for eastern meadowlark (*Sturnella magna*) a state declining species. The NHP also indicated the following species habitat to be present within a ¼ mile of the Site; State-threatened bobolink (*Dolichonyx oryzivorus*), State-threatened Savannah sparrow (*Passerculus sandwichensis*) and State-endangered vesper sparrow (*Pooecetes gramineus*). The response letter from the USFWS, dated August 19, 2004, indicated except for an occasional transient bald eagle (*Haliaeetus leucocephalus*), no other federally listed or proposed threatened or endangered fauna under the USFWS jurisdiction are known to occur within the vicinity of the Site.

**Bobolink (*Dolichonyx oryzivorus*):** Bobolinks inhabit low-intensity agricultural habitats, such as hayfields and pastures, during the breeding season. In addition, lush fallow fields and meadows of grasses, forbs, and wildflowers are occupied. Bobolink nests are often placed in areas of greatest vegetative height and density although small numbers of bobolinks may nest in grasslands. Bobolinks are primarily seedeaters, but also eat insects during breeding season.

**Savannah sparrow (*Passerculus sandwichensis*):** Indigenous to open habitats, the savannah sparrow nests in hay and alfalfa fields, fallow fields, grasslands, upland meadows, airports, pastures, and vegetated landfills. Suitable tracks must provide a mix of short and tall grasses, a thick litter layer, dense ground vegetation, and scattered shrubs, saplings, or forbs. Savannah sparrows are relatively tolerant of vegetative succession and may occupy fields of varied ages, including those containing early woody growth. Seeds and insects (caterpillars and grasshoppers) make up the Savannah Sparrow's diet. These sparrows eat proportionally more insects during the breeding season and feed them to the young.

**Vesper sparrow (*Pooecetes gramineus*):** Inhabitants of open areas, vesper sparrows reside in cultivated fields, grasslands, fallow fields, and pastures. Agricultural fields containing crops of corn, soybean, various grain species, or strawberry may be occupied. Farmed areas that are adjacent to fallow fields or contain uncultivated strips along fence-rows are favored. Vesper Sparrows eat mostly insects and the seeds of grasses and weeds.

Based on the above information regarding the two state-threatened and one state-endangered bird species, the site does not provide desirable habitat for these species. These species do represent an off-site ESA.

Bald Eagle foraging habitat maybe located around the Delaware River approximately 0.5-mile from the Site. As discussed in Section 2.1, the Delaware River is considered an off-site ESA because of potential pathways between Site groundwater and the River.

## **2.5 Rare, Threatened and Endangered Species - Flora**

As stated above, inquiries were made to the NHP and the USFWS regarding the potential presence of threatened or endangered species. The response letter from the NHP, dated July 1, 2004 indicated that no records existed for rare plants on or within a 0.25-mile of the Site. The response letter from USFWS, dated August 19, 2004 indicated no records for threatened or endangered flora within the Site.

As discussed in Section 1.5 various flora were observed during ENSR's Site investigation. However, no threatened or endangered species were identified, and the Site does not contain contiguous forest or state wilderness areas. Therefore no ESAs were defined at the Site based on vegetation.

## **2.6 Finfish Migratory Pathways**

The Lopatcong Creek is designated as a Category-one waterway because it is a trout production stream. This creek has been classified as an ESA in Section 2.1 because of the potential connection between Site groundwater and the creek.

### **3.0 COMPOUNDS OF POTENTIAL ECOLOGICAL CONCERN (COPECs)**

Based on previous investigations, compounds which have been reported in excess of the most stringent soil cleanup criteria include Metals, PCBs, total petroleum hydrocarbons (TPHC), base-neutral organic compounds (BNs). Due to the lack potential for ecological exposure, soil samples greater than 6-inches deep are not discussed within this BEE. Tables 5 through 13 summarize the analytical results within each Section. Figure 3 depicts the specific AOCs delineated within each Section. The following subsections detail the compounds of potential ecological concern (COPEC) for each Section. Initially, soils data were compared to the most stringent soil cleanup criteria to identify a preliminary list of COPECs. Where a complete exposure pathway between AOCs and ESAs was identified in Section 4.0, the data would be compared to applicable soil based wildlife and phytotoxicity criteria. No such complete pathways were identified for site soils.

#### **3.1 Section 2A**

As stated in Section 1.2.1, Section 2A includes AOCs 3E, 3F, 4, 16 and 33. A No Further Action (NFA) has been granted by the NJDEP (January 23, 1997) for AOC 4. Based on previous soil analytical results, soil samples collected in AOC 16 contained cadmium, copper, lead and nickel concentrations in excess of soil cleanup criteria. Soil samples collected in AOC 33 contained petroleum hydrocarbons and arsenic concentrations in excess of soil cleanup criteria. AOCs 3E and 3F had no exceedances present in depths less than six inches. Data not depicted was either not sampled, did not have an exceedance or was deeper than six inches. Analytical results for Section 2A are presented in Table 5.

#### **3.2 Section 2B**

As stated in Section 1.2.2, Section 2B includes AOCs 3E, 16 and 25. Based on previous Soil analytical results no soil samples collected in these AOCs contained concentrations in excess of soil cleanup criteria within the upper six inches of the soil profile.

#### **3.3 Section 5**

As stated in Section 1.2.3, Section 5 includes AOCs 17 and 32. A NFA was granted by the NJDEP (March 28, 1995) for AOC 32. Based on previous Soil analytical results soil samples collected in AOC 17 contained benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene concentrations in excess of soil cleanup criteria. Data not depicted was either not sampled, did not have an exceedance or was deeper than six inches. Analytical results for Section 5 are presented in Table 6.

### **3.4 Section 6A**

As stated in Section 1.2.4, Section 6 includes AOCs 10, 11, 12, 13, 14, 15, 20, 24 and 40. A NFA was conditionally granted to AOC 10 in an August 2, 2000 letter from the NJDEP. NFAs were granted to AOCs 11, 13, 14, 15, 20, 24 and 40. Based on previous Soil analytical results no soil samples collected in these AOCs contained concentrations in excess of soil cleanup criteria within the upper six inches of the soil profile.

### **3.5 Section 6B**

As stated in Section 1.2.5, Section 6B includes AOCs 1, 9, 19, 27, 28, and 35. NFAs for AOCs 9, 27, 28 and 35 was granted by the NJDEP. Based on previous Soil analytical results no soil samples collected in these AOCs contained concentrations in excess of soil cleanup criteria within the upper six inches of the soil profile.

### **3.6 Section 6C**

As stated in Section 1.2.6, Section 6C includes AOCs 2, 22, 23, 29, 34, 30, and 31. A NFA was granted to AOC 22 by the NJDEP. Soil samples within AOCs 23, 29, 30 and 31 contains concentrations of acenaphthene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, bis(2-Ethylhexyl)phthalate, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, arsenic, beryllium, copper, lead, mercury, nickel, and zinc in excess of soil cleanup criteria. Analytical results for Section 6C are presented in Table 7.

### **3.7 Section 6D**

As stated in Section 1.2.7, Section 6D includes AOCs 3C, 3D, 21 and 39. NFA was granted to AOC 21 by NJDEP in a letter dated October 18, 1994. Based on previous Soil analytical results soil samples collected in AOCs 3C and 3D, contained benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, arsenic, copper, lead, and nickel concentrations in excess of soil cleanup criteria. Analytical results for Section 6D are presented in Table 8.

### **3.8 Section 7**

As stated in Section 1.2.8, Section 7 includes AOCs 5, 7, 38 and 41. NFA was granted to AOCs 7 and 38 by the NJDEP. Based on previous Soil analytical results soil samples collected in AOC 41, contained TPHC concentrations in excess of soil cleanup criteria. Analytical results for Section 7 are presented in 9.



### 3.9 Groundwater

Based on the groundwater analytical data present in the November 2002 and November 2003 Groundwater Remedial Investigation Reports, groundwater at the Site has had reported concentrations of 1,1,1-trichloroethane, 1,1-dichloroethane, 1,1-dichloroethylene, 1,2-dichloroethane, carbon tetrachloride, chloroethane, cis-1,2-dichloroethene, tetrachloroethene, trichloroethylene, vinyl chloride, arsenic, chromium, and lead in excess of Groundwater Quality Standards (GWQS). Twelve well locations are in excess of GWQS and measurable LNAPL has been detected at 16 wells as illustrated in Figure 4. In recent events the only metal detection above GWQS has been for chromium at RW-11. Because groundwater may discharge to surface waterbodies (Lopatcong Creek or the Delaware River), groundwater quality data were also compared to the Delaware River Basin Commission's chronic toxicity criteria. Of the contaminants for which criteria were available, only chromium concentrations at RW-11 exceeded the applicable criteria. Groundwater at RW-11 is present in an area where the groundwater potentiometer surface is highest, indicating the groundwater flow from this location may be radial, as evidenced by groundwater monitoring data (Figure 4). Downgradient wells to the west (MW-40 through MW44) and to the south (RW-09 and TH36) did exhibit chromium concentrations in excess of applicable criteria when previously sampled in 2000 and 2002, but by an order of two magnitudes lower. Chromium levels were also below GWQS at other sampled locations and one magnitude greater than the applicable aquatic life criteria.

A summary of groundwater analytical results for target VOCs and metals are presented in Table 10. No applicable aquatic life criteria are available for VOCs.

## **4.0 CHEMICAL MIGRATION PATHWAYS**

A critical component of the BEE is the identification and evaluation of potential contaminant migration pathways from the Sections of AOCs to ESAs. Potential contaminant migration pathways are the means by which COPECs come into contact with ESAs. In the absence of a complete contaminant migration pathway, there is no risk posed to ESAs. In other words, in cases where COPECs have been identified at a given AOC, there is little or no risk to sensitive natural resources, including ESAs, if viable pathways do not exist for the COPECs to move from the AOC to the sensitive natural resources.

As noted in Table 4 and discussed in Section 2.0, ESAs located at the Site and in adjacent areas include surface water (Lopatcong Creek), finfish migratory pathways (Lopatcong Creek), and threatened and endangered species (the Delaware River and off-site habitat for one threatened and one endangered avian species).

Several potential mechanisms exist at the Site for contaminant migration to ESAs. These include:

Pathway 1: Contaminant discharge from AOCs to downgradient ESAs via surface runoff or erosion of exposed soils;

Pathway 2: Discharge of groundwater contaminants to downgradient waterbodies (e.g., Lopatcong Creek or the Delaware River) and subsequent exposure to aquatic life;

Pathway 3: Direct ingestion of contaminated soils by ESA species; and

Pathway 4: Indirect ingestion of Site contaminants by ESA species via contaminant accumulation in forage species.

A summary of the assessment of potential chemical migration pathways from AOCs to ESAs is presented in Table 11 for each of the grouped AOCs evaluated in detail for this BEE. The following subsections detail the analysis of potential migration pathways from AOC COPECs to ESAs.

### **4.1 Sections 2B, 6A, 6B, and 6D**

Pavement eliminates the potential migration pathways for soil contaminants via runoff/erosion or direct ingestion for Sections 2B, 6A, 6B and 6D which are either buildings or paved. Surface runoff from these paved surfaces is discharged and treated via the Spray and Inverse Ponds via a NJPDES permitted discharge via a drainage ditch to Lopatcong Creek. The ditch receiving discharges from these areas was addressed in the 2002 South-side BEE which documented no potential ecological risk associated with the discharge ditch. As such, discharges associated with surface runoff from these areas are not addressed further.

There are no complete migration pathways between AOC COPECs and ESAs for these Sections.

## 4.2 Section 2A

Potential migration pathways from all AOCs within Section 2A were evaluated. The majority of Section 2A is maintained lawn with sporadic ornamental trees. Some areas are paved for walkways and those adjacent to buildings are roads. No areas of exposed soil were observed. Vegetative cover eliminates the potential for soil contaminant migration via runoff/erosion as well as potential for direct soil ingestion by ESA species.

Surface water runoff from vegetated areas is likely to be limited. Overland drainage paths were observed from the north flowing south toward building 17A and 17B before going into stormwater sewers. The stormwater collection system in this portion of the Site conveys water to the Spray Pond. As noted above, the 2002 BEE demonstrated no ecological risk associated with discharges from the Inverse Ponds via the discharge ditch.

As noted in Section 2.0, habitat for three species of state threatened or endangered bird species may occur within 0.25 miles of the Site. However, Section 2A does not contain preferred habitat for these species, and hence, these bird species are unlikely to feed on plants or insects in Section 2A. Therefore, there is no complete indirect exposure pathway between these ESA species and soil contaminants (via food sources with contaminant accumulation from AOC soils).

There are no complete migration pathways between AOC COPECs and ESAs for this Section.

## 4.3 Section 5

The eastern portion of Section 5 consists of maintained lawn, various carex sedges, Eastern white pine, black birch (*Betula lenta*), and tree-of-heaven. Vegetative cover eliminates the potential for soil contaminant migration via runoff/erosion as well as potential for direct soil ingestion by ESA species. Surface water runoff from vegetated areas is likely to be limited. The surface runoff of this area flows from the east, either via overland flow or channeled through storm sewers before discharging to a detention pond to the west. This detention pond empties via storm sewers, travelling south, along the western boundary of the Site. Portions of the runoff pool to the east of Building #2, before infiltrating into the soil. Therefore, no complete exposure pathway exists between Section 5 AOCs and surface water related ESAs.

As noted in Section 2.0, habitat for three species of state threatened or endangered bird species may occur within 0.25 miles of the Site. However, Section 5 does not contain preferred habitat for these species, and hence, these bird species are unlikely to feed on plants or insects in Section 5. Therefore, there is no complete indirect exposure pathway between these ESA species and soil contaminants (via food sources with contaminant accumulation from AOC soils).

There are no complete migration pathways between AOC COPECs and ESAs for this Section.

#### **4.4 Section 6C**

Concrete and fill, with disturbed vegetation growing through these areas, cover the surface of Section 6C. Exposed soil along the western slope of the road to the spray pond was observed (Photo 15). Surface runoff from this area flows east toward the Spray Pond. As noted above, the 2002 BEE demonstrated no ecological risk associated with discharges from the Inverse Ponds via the discharge ditch.

As noted in Section 2.0, habitat for three species of state threatened or endangered bird species may occur within 0.25 miles of the Site. However, Section 6C does not contain preferred habitat for these species, and hence, these bird species are unlikely to feed on plants or insects in Section 6C. Therefore, there is no complete indirect exposure pathway between these ESA species and soil contaminants (via food sources with contaminant accumulation from AOC soils).

There are no complete migration pathways between AOC COPECs and ESAs for this Section.

#### **4.5 Section 7**

Section 7 is maintained lawn and pavement near Building 104. No exposed soil was observed in this Section, thus eliminating potential discharge of contaminants via erosion and/or direct ingestion of contaminated soils by ESA species. Depending on the area of Section 7, stormwater runoff is captured in the sewers and flows to the Spray Pond before treatment and discharging into the Inverse Ponds, or travels directly to the Inverse Ponds. Surface runoff not captured in the stormwater system flows south toward the Inverse Ponds. As noted above, the 2002 BEE demonstrated no ecological risk associated with discharges from the Inverse Ponds via the discharge ditch.

As noted in Section 2.0, habitat for three species of state threatened or endangered bird species may occur within 0.25 miles of the Site. However, Section 7 does not contain preferred habitat for these species, and hence, these bird species are unlikely to feed on plants or insects in Section 7. Therefore, there is no complete indirect exposure pathway between these ESA species and soil contaminants (via food sources with contaminant accumulation from AOC soils).

There are no complete migration pathways between AOC COPECs and ESAs for this Section.

#### **4.6 Groundwater**

Since groundwater has been reported on average 90 feet below ground surface, the potential migration pathways for groundwater are toward Lopatcong Creek and the Delaware River. Based on Figure 4, it appears that most of the groundwater flow from the plant would in fact flow toward Lopatcong Creek (0.53 miles) and/or the Delaware River (0.64 miles). Chromium exceeded applicable aquatic life criteria in at one location on Site (RW-11). As noted in Section 3.0, groundwater at RW-11

has radial flow, and does not follow the general groundwater flow pattern for the site. Based on the data from the surrounding wells, the contaminant found at this location does not appear to be migrating offsite. Therefore, there is not a complete migration pathway between the groundwater COPEC at RW-11 and surface water-related ESAs (Lopatcong Creek and the Delaware River).

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

Initially, a total of nine Sections containing AOCs, including groundwater, were identified on the northern portion of the Ingersoll-Rand Facility in Phillipsburg, New Jersey. Additional AOCs identified and analyzed as part of the South-Side BEE are detailed in Appendix C (Baseline Ecological Evaluation of the South-Side Area Ingersoll-Rand Facility, 2002). The following summarizes ENSR's conclusions and recommendations for further ecological evaluation of the Sections of AOCs found at the Site of the Ingersoll-Rand facility in Phillipsburg, NJ:

- No complete exposure pathway exists between soil COPECs for any of the grouped AOCs (Sections) and ESAs. Therefore no further evaluation is recommended.
- Groundwater - Groundwater may discharge from the Site to Lopatcong Creek or the Delaware River. However, contaminants in groundwater were below applicable aquatic life criteria at all locations except for chromium at RW-11. Groundwater at this location has a radial flow pattern, and does not follow the groundwater flow pattern exhibited by the rest of the Site. Downgradient wells exhibited chromium at concentrations in excess by one magnitude of applicable aquatic life criteria and not by three magnitudes as the concentrations at RW-11. As such, there is no evidence of a complete migration pathway between chromium present in RW-11 and the surface water ESAs. Therefore, further investigation regarding potential ecological risk associated with groundwater discharges to surface water ESAs is not warranted.

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## TABLES

**TABLE 1**  
**SUMMARY OF AREAS OF CONCERN**  
Baseline Ecological Evaluation  
Ingersoll-Rand Co.  
Phillipsburg, NJ

Section	AOCs Included	Contaminants Identified in Excess of NJDEP Soil Cleanup Criteria	Regulatory Status
2A	AOCs 3E and 3F: Former chip storage areas	Metals, TPHC, BN	Investigation - 11/2003 Deed Notice - 3/2005
	AOC 4: Three round concrete tanks	Metals, TPHC	NFA granted
	AOC 16: Former drill manufacturing building (portion)	Metals, TPHC, VOCs	Investigation - 11/2003 Deed Notice - 3/2005
	AOC 33: Former incinerator	Metals, TPHC	Investigation - 11/2003 Deed Notice - 3/2005
2B	AOCs 3E: Former chip storage area	Metals, TPHC, BN	Investigation - 11/2003 Deed Notice - 3/2005
	AOC 16: Former drill manufacturing building (portion)	Metals, TPHC, VOCs	Investigation - 11/2003 Deed Notice - 3/2005
	AOC 25: Two 10,000 Gallon USTs	None	NFA Granted
5	AOC 17: Former iron foundry	Metals, TPHC, BN	Investigation - 11/2003 Deed Notice - 3/2005
	AOC 32: Unlined Lagoons	None	NFA Granted
6A	AOC 10: Former heat treat building	Metals, VOCs	NFA Conditionally Granted
	AOC 11: Former 10,000 gal Metanol UST	None	NFA Granted
	AOC 12: Two former 10,000 gal quench oil UST	Metals, TPHC, BN	Investigation - 11/2003 RAW - 9/2005
	AOC 13: 500 Gallon UST	None	NFA Granted
	AOC 14: 500 gal gasoline UST	None	NFA Granted
	AOC 15: Two former 1,000 gal USTs (diesel and lube oil)	None	NFA Granted
	AOC 20: 5000 Gallon Waste Oil Tank	None	NFA Granted
	AOC 24: 2000 Gallon Process Tank	None	NFA Granted
	AOC 40: Concrete Structure	None	NFA Proposed
6B	AOC 1: Former transformer	TPHC	Investigation - 11/2003 Deed Notice - 3/2005
	AOC 9: 10,000 gal diesel UST	None	NFA Granted
	AOC 19: 1500 Gallon Waste Oil Tank	Metals, TPHC, PCBs, BN	Investigation - 11/2003 Deed Notice - 3/2005
	AOC 27: Hazardous Waste Storage Shed	None	NFA Granted
	AOC 28: Ultrafilter in Building #12	None	NFA Granted
	AOC 35: 1000 Gallon Diesel UST	None	NFA Proposed

**TABLE 1**  
**SUMMARY OF AREAS OF CONCERN**  
Baseline Ecological Evaluation  
Ingersoll-Rand Co.  
Phillipsburg, NJ

6C	AOC 2: Spray pond sludge disposal area	Metals, TPHC	RI Sampling - 11/2003 Excavation - 3/2005 PE Sampling - 4/2005
	AOC 22: 600 Gallon "Brill Skimmer" AST	None	NFA Granted
	AOCs 23 and 34: Former incinerators	Metals, BN	Investigation - 11/2003 Deed Notice - 3/2005
	AOC 29: Old Landfill	Metals, TPHC, PCBs, BN	NFA Conditionally Granted
	AOC 30: Spray pond	Metals, TPHC, BN	NFA Requested
	AOC 31: Inverse ponds	Metals, TPHC, BN	Close ponds - 6/2006 Investigation - 9/2006 RAW - 6/2007 RA/DN - 2008
6D	AOCs 3C and 3D: Former chip pads	Metals, BN	Investigation - 11/2003 Deed Notice - 3/2005
	AOC 21: 1,750 gal waste coolant AST	None	NFA Granted
	AOC 39: Scrap Pad	Metals, TPHC, BN	Investigation - 11/2003 Deed Notice - 3/2005
7	AOC 5: Contaminated Soil Piles	Metals, BN	Investigation - 11/2003 Deed Notice or RAW - 3/2005
	AOC 7: Three Fuel Oil USTs	None	NFA Granted
	AOC 38: Buried fuel oil pipelines	None	NFA Granted
	AOC 41: Oil/Water Separator building and spill	Metals, TPHC, BN	Investigation - 11/2003 Deed Notice or RAW - 3/2005
Groundwater	Site	VOCs, Free Product	Semi-Annual groundwater sampling

**NOTES:**

AOC - Area of Concern

NJDEP - New Jersey Department of Environmental Protection

PCB - Polychlorinated Biphenyls

TPH - Total Petroleum hydrocarbons

NFA - No Further Action

**TABLE 2**  
**VEGETATION OBSERVED DURING SITE INSPECTIONS**  
Baseline Ecological Evaluation  
Ingersoll-Rand Co.  
Phillipsburg, NJ

Common Name	Latin Name	Location Observed
Box-Elder	<i>Acer negundo</i>	Forested fringes
Red Maple	<i>Acer Rubra</i>	Ornamental tree species
Silver Maple	<i>Acer saccharium</i>	Forested areas
Tree-of-Heaven	<i>Ailanthus altissima</i>	Typical throughout site
Yellow foxtail	<i>Alopecurus sp.</i>	Open fields
Black Birch	<i>Betula lenta</i>	Typical throughout site
Caryx sedge	<i>Caryx sp.</i>	Typical throughout site
Crown Vetch	<i>Coronilla varia</i>	Typical throughout site
Queen Anne's Lace	<i>Daucus carota</i>	Typical throughout site
Crabgrass	<i>Digitaria sp.</i>	Typical throughout site
Viper's bugloss	<i>Echium vulgare</i>	Typical throughout site
Black Walnut	<i>Juglans nigra</i>	Forested fringes
Duck Weed	<i>Lemna sp.</i>	Covered water on inverse ponds
Perennial Ryegrass	<i>Lolium perenne</i>	Open fields
Japanese honeysuckle	<i>Lonicera japonica</i>	Open fields and forested fringes
Wild Bergamot	<i>Monarda fistulosa</i>	Typical throughout site
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	Typical throughout site - Disturbed areas
Common Reed	<i>Phragmites australis</i>	Open and landscaped fields -Disturbed wetland areas
Eastern White Pine	<i>Pinus strobus</i>	Ornamental tree species
Sycamore	<i>Platanus occidentalis</i>	Forested areas and forested fringes
Black Cherry	<i>Prunus serotina</i>	Successional forested areas
White Oak	<i>Quercus alba</i>	Forested upland areas
Red Oak	<i>Quercus rubra</i>	Forested upland areas
Staghorn Sumac	<i>Rhus typhina</i>	Forested areas, landscaped fields
Black Locust	<i>Robinia pseudoacacia</i>	Successional forest areas and forested fringes
Multiflora Rose	<i>Rosa multiflora</i>	Open fields to forested fringes
Pussy Willow	<i>Salix discolor</i>	Near ephemeral stream and typically near water
Sweet goldenrod	<i>Solidago sp.</i>	Open Fields
Poison Ivy	<i>Toxicodendron radicans</i>	Open and landscaped fields
Big Tooth Aspen	<i>Tremulus populoides</i>	Forested fringes

**TABLE 3**  
**WILDLIFE OBSERVED DURING SITE INSPECTIONS**  
Baseline Ecological Evaluation  
Ingersoll-Rand Co.  
Phillipsburg, NJ

Common Name	Latin Name	Location Observed	Date Observed:	
			July 2002	July 2004
<b>Avian</b>				
Red-winged blackbird	<i>Agelaius phoeniceus</i>	Open landscaped fields near Lopatcong Creek	X	
Mallard	<i>Anas platyrhynchos</i>	Near open water	X	
Great blue heron	<i>Ardea herodias</i>	Typical throughout site		X
Tufted titmouse	<i>Baeolophus bicolor</i>	Open forests and forested fringes	X	
Canada Goose	<i>Branta canadensis</i>	Typical in landscaped areas and near open water		X
Turkey Vulture	<i>Cathartes aura</i>	Soaring above property	X	
Northern Flicker	<i>Colaptes auratus</i>	Open forests and agricultural fields	X	
American Crow	<i>Corvus brachyrhynchos</i>	Typical throughout site		X
Blue Jay	<i>Cyanocitta cristata</i>	Forested areas	X	
American Kestrel	<i>Falco sparverius</i>	Perched and soaring above property site	X	
Barn Swallow	<i>Hirundo rustica</i>	Typical throughout site		X
Dark-eyed Junco	<i>Junco hyemalis</i>	Forested areas	X	
Wild Turkey	<i>Meleagris gallopavo</i>	Typical throughout site		X
Song Sparrow	<i>Melospiza melodia</i>	Forested fringes and open fields	X	
Northern Mockingbird	<i>Mimus polyglottus</i>	Open forests and forested fringes		X
Cardinal	<i>Richmondia cardinalis</i>	Open forested areas	X	
Eastern Phoebe	<i>Sayornis phoebe</i>	Open agricultural fields	X	
Eastern Bluebird	<i>Sialia sialis</i>	Open landscaped fields	X	
European Starling	<i>Sturnus vulgaris</i>	Typical throughout site	X	
American Robin	<i>Turdus migratorius</i>	Typical throughout site		X
Mourning Dove	<i>Zenaidura macroura</i>	Perched and open fields		X
Sharp Shinned Hawk	<i>Accipiter striatus velox</i>	Soaring above property	X	
Red-tailed hawk	<i>Buteo jamaicensis</i>	Soaring above property	X	
Killdeer	<i>Charadrius vociferus</i>	Open agricultural fields	X	
Grey Catbird	<i>Dumetella carolinensis</i>	Typical throughout site		X
Ring-billed Gull	<i>Larus delawarensis</i>	Soaring above property	X	
Downy woodpecker	<i>Picoides pubescens</i>	Forested areas	X	
Common grackle	<i>Quiscalus quiscula</i>	Typical throughout site		X
<b>Mammals</b>				
Woodchuck	<i>Marmota monax</i>	Near open water and open fields		X
White Tailed Deer	<i>Odocoileus virginianus</i>	Not observed but expected to be present on or near site.		X
Raccoon	<i>Procyon lotor</i>	Typical throughout site	X	
E. Cottontail	<i>Sylvilagus floridanus</i>	Open agricultural and landscaped fields	X	
Eastern Garter snake	<i>Thamnophis s. sirtalis</i>	Ephemeral Stream and open fields	X	
<b>Amphibians</b>				
Green Frog	<i>Rana clamitans</i>	Typical throughout site		X

**TABLE 4**  
**SUMMARY OF ENVIRONMENTALLY SENSITIVE AREAS**

Baseline Ecological Evaluation  
Ingersoll-Rand Co.  
Phillipsburg, NJ

Environmentally Sensitive Area (per NJAC 7:1E-1.8)	Presence at Site or Immediately Adjacent to Site (Comments)
1. Surface Waters	Lopatcong Creek is located along southeast portion of site; Lopatcong Creek flows southwesterly for approximately 2 miles before entering the Delaware River. Delaware River is located approximately 0.5 miles southwest of the site.
2. Sources of water supply	Not present
3. Bay islands and barrier island corridors	Not present
4. Beaches	Not present
5. Dunes	Not present
6. Wetlands and wetland transition areas	A wetland delineation conducted July 2003 indicated that many of the state and federally listed wetlands are man-made on areas that were not historically wetlands. Only one wetland area was confirmed in the northwest corner of the Site. This is not considered an ESA.
7. Breeding areas for forest area nesting species, colonial water birds, or aquatic furbearers	Not present
8. Migratory stopover areas for migrant shorebirds, raptors, or passerines	Not present
9. Wintering areas (including coastal tidal marshes and water areas), waterfowl concentration areas, and Atlantic white cedar stands	Not present
10. Prime fishing areas	Not present
11. Finfish migratory pathways	Lopatcong Creek is mapped by NJDEP as Trout Production stream.
12. Estuarine areas	Not present
13. Shellfish harvesting waters	Not present
14. Forest areas (prime and unique forestland)	Not present
15. Federal and State-listed rare species	NJ Natural Heritage Program (NHP) indicated that an occurrence of eastern meadowlark ( <i>Sturnella magna</i> ) was mapped on Site. NHP also noted habitat mapping for occurrences of boblink ( <i>Dolichonyx oryzivorus</i> ), savannah sparrow ( <i>Passerculus sandwichensis</i> ) and vesper sparrow ( <i>Pooecetes gramineus</i> ) within 1/4 mile of the Site. This area of the Delaware River is mapped as bald eagle floaging habitat by NJDEP Landscape Project. No records for rare, threatened or endangered plants or their critical habitat was noted on or within 1/4 mile of the Site. The US Fish and Wildlife Service (USFWS) indicated, that except for an occassion transient bald eagle ( <i>Haliaeetus leucocephalus</i> ), no other federally listed threatened or endangered species under USFWS jurisdiction is present within the Site vicinity.
16. Federal and State-listed wilderness areas	Not present
17. Federal and State Wild and Scenic Rivers	Portions of the Delaware River are mapped as Scenic; however, not areas along Phillipsburg and Lopatcong

**TABLE 5**  
**SOIL EXCEEDANCE SUMMARY: SECTION 2A**  
Baseline Ecological Evaluation  
Ingersoll-Rand Co.  
Phillipsburg, NJ

AOC	Sample ID	Date	Depth	Petroleum Hydrocarbons	Arsenic	Cadmium	Copper	Lead	Nickel
16	ROCK DRILL PT 1-L4286-1	07/30/99	0-0.5	-	-	82.21	1890	2350	517
33	A33-1-357422	06/19/02	0-0.5	25500					
33	A33-2-357423	06/19/02	0-0.5	19600	31.2	-	-	-	-
33	A33-3-357424	06/19/02	0-0.5	33300	69.4	-	-	-	-
33	A33-N (0.0-0.5)- 230444-004	11/10/03	0-0.5	-	24	-	-	-	-

Note:

All Results are reported in parts per million (ppm).

TPHC = total petroleum hydrocarbon.

The data not reported was either not sampled or did not exceed the Most Stringent Soil Cleanup Criteria (MSSCC).

Only samples within the first six inches of the surface soil were reported.

**TABLE 6**  
**SOIL EXCEEDANCE SUMMARY: SECTION 5**  
Baseline Ecological Evaluation  
Ingersoll-Rand Co.  
Phillipsburg, NJ

AOC	Sample ID	Date	Depth	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Dibenzo(a,h) anthracene	Indeno(1,2,3- cd)pyrene
17	17-DW12 (0-0.5)- 231285-004	12/04/03	0-0.5	-	1.2	2.3	-	-	-
17	17-DW12 (0-0.5)- 231285-004RE	12/04/03	0-0.5	-	1.2	2.4	-	-	-
17	17-DW9 (0-0.5)- 231285-003	12/04/03	0-0.5	-	-	0.94	-	-	-
17	17-DW11 (0-0.5)- 231413-001	12/08/03	0-0.5	-	-	5.4 E	-	-	-
17	17-DW11 (0-0.5)- 231413-001	12/08/03	0-0.5	1.8	2.7	-	1.8	0.78	2
17	17-DW11 (0-0.5)- 231413-001DL	12/08/03	0-0.5	-	2.8 D	6.2 D	2 D	-	1.9 D
17	17-DW11 (0-0.5)- 231413-001DL	12/08/03	0-0.5	1.9 JD	-	-	-	0.67 JD	-

Note:

All Results are reported in parts per million (ppm).

The data not reported was either not sampled or did not exceed the Most Stringent Soil Cleanup Criteria (MSSCC).

Only samples within the first six inches of the surface soil were reported.



**TABLE 7**  
**SOIL EXCEEDANCE SUMMARY: SECTION 6C**  
Baseline Ecological Evaluation  
Ingersoll-Rand Co.  
Phillipsburg, NJ

AOOC	Sample ID	Date	Depth	TPHC	Acenaphthene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	bis(2-Ethylhexyl)phthalate	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene
23	A23-2-357426	06/19/02	0-6	-	5	3.9	6.6	2.4	-	-	-	-	1.6
23	A23-3-357427	06/19/02	0-0.5	-	-	0.75	1.5	-	-	-	-	-	-
23	A23-4-357428	06/19/02	0-0.5	-	-	-	-	-	-	-	-	-	-
23	A23-4A-357429	06/19/02	0-0.5	-	-	-	-	-	-	-	-	-	-
29	A29-12-A1-278369	05/31/01	0-0.5	-	0.93	1.4	3.4	1.1	-	-	-	-	1.7
29	A29-12-A-278368	05/31/01	0-0.5	-	-	1.2	3.2	-	-	-	-	-	1.6
29	A29-6-A-278362	05/31/01	0-0.5	-	-	0.92	1.2	-	-	-	-	-	-
30	DUPLICATE-60158009	01/17/96	0-0.5	-	-	-	1.1 J	1.8	1.1 J	-	-	-	-
30	S1-60158001	01/17/96	0-0.5	-	-	3.1	3.1	3.5	2.4	-	-	-	-
30	S2-60158002	01/17/96	0-0.5	-	-	3.7	3.4	5.4	-	-	-	-	-
30	S3-60158003	01/17/96	0-0.5	-	-	15	18	23	5.3 J	-	16	2.6 J	-
30	S4-60158004	01/17/96	0-0.5	-	-	2.5	2.6	4.6	-	-	-	0.67 J	-
30	S5-60158005	01/17/96	0-0.5	39000	-	6.2 J	5.5 J	8.6	4.9 J	-	-	1.3 J	-
30	S6-60158006	01/17/96	0-0.5	31000	-	45	35	53	13 J	-	53	7.1 J	-
30	S7-60158007	01/17/96	0-0.5	-	-	1.6 J	2.8	1.1 J	7.9	-	-	0.83 J	-
30	S8-60158008	01/17/96	0-0.5	61000	-	6.2 J	-	20 J	9.6 J	-	11 J	-	-
30	S8-60158008	01/17/96	0-0.5	-	-	-	-	-	-	65	-	-	-
30	SP-1 (0-0.5)-498951	02/05/04	0-0.5	-	-	-	-	-	-	-	-	-	-
31	A31-4-345224	04/18/02	0-0.5	-	-	-	-	-	-	-	-	-	-
31	L_P_N-189367	03/13/00	0-0.5	17000	-	-	0.86	1.4	-	-	-	-	-
31	L_P_S-189368	03/13/00	0-0.5	-	-	-	-	-	-	-	-	-	-
31	L_P_W-189370	03/13/00	0-0.5	22700	-	-	1.3	2.9	1.3	-	-	-	-
31	U_P_E-189373	03/13/00	0-0.5	40200	-	5.5	6.3	8.8	4.2	-	-	0.99	-
31	U_P_N-189371	03/13/00	0-0.5	16600	-	1	1.4	2.7	1	-	-	-	-
31	U_P_S-189372	03/13/00	0-0.5	14800	-	2.4	3.6	7.4	3.3	-	-	0.76	-
31	U_P_W-189374	03/13/00	0-0.5	-	-	-	-	1.6	-	-	-	-	-
31	A31-1-344336	04/16/02	0-0.5	-	-	2.4	3.3	7.4	2.6	-	-	0.77	-
31	A31-3-344338	04/16/02	0-0.5	-	-	1	1.5	3.4	1.2	-	-	-	-
31	A31-5-345223	04/18/02	0-0.5	-	-	1.7	1.5	2.2	-	-	-	-	-
31	A31-2-344337	04/16/02	0-0.5	32600	-	-	-	-	-	-	-	-	-
31	A31-6-345225	04/18/02	0-0.5	12200	-	-	-	-	-	-	-	-	-

Note:

All Results are reported in parts per million (ppm).

TPHC = total petroleum hydrocarbon.

The data not reported was either not sampled or did not exceed the Most Stringent Soil Cleanup Criteria (MSSCC).

Only samples within the first six inches of the surface soil were reported.

**TABLE 7**  
**SOIL EXCEEDANCE SUMMARY: SECTION 6C**  
Baseline Ecological Evaluation  
Ingersoll-Rand Co.  
Phillipsburg, NJ

AOC	Sample ID	Date	Depth	Indeno(1,2,3-cd)pyrene	Arsenic	Beryllium	Copper	Lead	Mercury	Nickel	Zinc
23	A23-2-357426	06/19/02	0-6	-	-	-	-	-	-	-	-
23	A23-3-357427	06/19/02	0-0.5	-	-	-	-	-	-	-	-
23	A23-4-357428	06/19/02	0-0.5	-	-	-	1510	-	-	587	-
23	A23-4A-357429	06/19/02	0-0.5	-	-	-	2140	-	-	754	-
29	A29-12-A1-278369	05/31/01	0-0.5	-	-	-	-	-	-	-	-
29	A29-12-A-278368	05/31/01	0-0.5	-	-	-	-	-	-	-	-
29	A29-6-A-278362	05/31/01	0-0.5	-	-	-	-	-	-	-	-
30	DUPLICATE-60158009	01/17/96	0-0.5	-	-	-	1060	466	28.5	-	2400
30	S1-60158001	01/17/96	0-0.5	1.8	-	-	916	464	29.1	254	-
30	S2-60158002	01/17/96	0-0.5	2.2	-	-	696	416	41.5	259	-
30	S3-60158003	01/17/96	0-0.5	10	-	-	1180	467	39.2	268	2350
30	S4-60158004	01/17/96	0-0.5	1.8	-	-	938	405	16.3	-	2700
30	S5-60158005	01/17/96	0-0.5	3.3 J	-	-	1340	519	56	-	3630
30	S6-60158006	01/17/96	0-0.5	16 J	20	-	1530	784	38.1	251	3820
30	S7-60158007	01/17/96	0-0.5	2.2 J	-	-	1690	547	-	-	4830
30	S8-60158008	01/17/96	0-0.5	5.6 J	-	3.5 B	-	-	-	340 B	-
30	S8-60158008	01/17/96	0-0.5	-	-	-	2390	731	90.2	-	4940
30	SP-1 (0-0.5)-498951	02/05/04	0-0.5	-	-	-	1140	-	-	-	-
31	A31-4-345224	04/18/02	0-0.5	-	20.2	-	-	-	-	-	-
31	L_P_N-189367	03/13/00	0-0.5	-	-	-	933	-	-	-	2300
31	L_P_S-189368	03/13/00	0-0.5	-	-	-	749	-	-	-	1630
31	L_P_W-189370	03/13/00	0-0.5	-	-	-	1210	427	14	269	2900
31	U_P_E-189373	03/13/00	0-0.5	-	-	-	783	-	-	-	1510
31	U_P_N-189371	03/13/00	0-0.5	-	-	-	1140	-	-	-	1850
31	U_P_S-189372	03/13/00	0-0.5	-	-	-	1000	-	-	-	2110
31	U_P_W-189374	03/13/00	0-0.5	-	-	-	716	-	-	-	-
31	A31-1-344336	04/16/02	0-0.5	2.7	-	-	-	-	-	-	-
31	A31-3-344338	04/16/02	0-0.5	1.7	-	-	-	-	-	-	-
31	A31-5-345223	04/18/02	0-0.5	1.3	-	-	-	-	-	-	-
31	A31-2-344337	04/16/02	0-0.5	-	-	-	-	-	-	-	-
31	A31-6-345225	04/18/02	0-0.5	-	-	-	-	-	-	-	-

Note:

All Results are reported in parts per million (ppm).

TPHC = total petroleum hydrocarbon.

The data not reported was either not sampled or did not exceed the Most Stringent Soil Cleanup Criteria (MSSCC).

Only samples within the first six inches of the surface soil were reported.

**TABLE 8**  
**SOIL EXCEEDANCE SUMMARY: SECTION 6D**  
Baseline Ecological Evaluation  
Ingersoll-Rand Co.  
Phillipsburg, NJ

AOC	Sample ID	Date	Depth	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Chrysene	Dibenzo(a,h) anthracene	Indeno(1,2,3- cd)pyrene	Arsenic	Copper	Lead	Nickel
3c	3C-3A-394795	12/04/02	0-0.5	12	14	29	10	17	4.2	15	-	-	-	-
3c	3C-2_0-5- 395535	12/06/02	0-0.5	2.4	2.7	4.9	2.1	-	-	1.3	-	-	-	-
3c	3C-11_0-0.5- 395540	12/06/02	0-0.5	-	-	-	-	-	-	-	594	-	-	-
3c	3C-13_0-5- 395548	12/06/02	0-0.5	-	-	-	-	-	-	-	59.1	-	-	-
3c	3C-15_0-5- 395545	12/06/02	0-0.5	-	-	-	-	-	-	-	35.7	-	-	-
3c	3C-2_0-5- 395535	12/06/02	0-0.5	-	-	-	-	-	-	-	21.5	-	-	-
3c	3C-5A-394798	12/04/02	0-0.5	-	-	-	-	-	-	-	22.2	1910	1150	-
3d	3D-12A-394785	12/04/02	0-0.5	1	1	2	-	-	-	-	-	-	-	-
3d	3D-13A-394782	12/04/02	0-0.5	34	40	53	21	35	5.4	19	111	-	-	-
3d	3D-15A-394779	12/04/02	0-0.5	31	24	32	13	31	3.5	13	281	-	1240	-
3d	3D-2A-394792	12/04/02	0-0.5	-	1	2	-	-	-	-	79.2	-	-	-
3d	3D-3A-394773	12/04/02	0-0.5	2.3	2.8	10	3.6	-	0.9	2.6	178	3940	725	1920
3d	3D-7A-394776	12/04/02	0-0.5	-	1	2.6	0.91	-	-	-	64	-	-	-
3cd	3CD-1 (0-0.5)- 497660	01/27/04	0-0.5	-	0.97	1.1	1.1	-	-	-	-	-	-	-
3cd	3CD-S2 (0-0.5)- 497654	01/27/04	0-0.5	-	0.66	-	-	-	-	-	25.5	-	-	-
3cd	3CD-S3 (0-0.5)- 497657	01/27/04	0-0.5	-	0.76	1.1	1	-	-	-	21.5	-	-	-

Note:

All Results are reported in parts per million (ppm).

TPHC = total petroleum hydrocarbon.

**TABLE 9**  
**SOIL EXCEEDANCE SUMMARY: SECTION 7**  
 Baseline Ecological Evaluation  
 Ingersoll-Rand, Co.  
 Phillipsburg, NJ

AOC	Sample ID	Date	Depth	TPHC
41	BUILDING 1041-13697	02/10/00	0-0.5	40000
41	SAMPLE 3- 13699	02/10/00	0-0.5	59000
41	SAMPLE 4- 13700	02/10/00	0-0.5	180000
41	SAMPLE 5- 13701	02/10/00	0-0.5	170000

Note:

All Results are reported in parts per million (ppm).

TPHC = total petroleum hydrocarbon.

**TABLE 10**  
**GROUNDWATER EXCEEDANCE SUMMARY**  
Baseline Ecological Evaluation  
Ingersoll-Rand Co.  
Phillipsburg, NJ

Field ID					MW04			MW04	MW04Diss	MW06	MW16			
Lab ID					463778	463779	463780	471921	471922	465853	463792	463793	463794	463795
Depth					95.5 - 96.5	107.5 - 108.5	119.5-120.5			-	129.5 - 130.5	154.5 - 155.5	189.5 - 190.5	129.5 - 130.5
Sample Date			Delaware River Basin Commission		09/23/03	09/23/03	09/23/03	10/13/2003	10/13/2003	09/29/03	09/23/03	09/23/03	09/23/03	09/23/03
Volatiles Organic Compounds			Freshwater Objective											
	CSA_RN	GWQS	Acute	Chronic										
1,1,1-Trichloroethane	71-55-6	30	-	-	2.4	2.2	<b>110</b>	-	-	1.6	0.8	0.8	0.8	7.6
1,1-Dichloroethane	75-34-3	50	-	-	4.3	4.1	<b>190</b>	-	-	0.8	1.9	2	2.1	6.1
1,1-Dichloroethylene	75-35-4	2	-	-	(0.4) U	(0.4) U	(8.6) U	-	-	0.5	0.9	0.9	0.9	<b>4.2</b>
1,2-Dichloroethane	107-06-2	2	-	-	(0.3) U	(0.3) U	<b>26</b>	-	-	(0.3) U	(0.3) U	(0.3) U	(0.3) U	(0.3) U
Carbon tetrachloride	56-23-5	2	-	-	(0.2) U	(0.2) U	(3.8) U	-	-	(0.2) U	(0.2) U	(0.2) U	(0.2) U	(0.2) U
Chloroethane	75-00-3	100	-	-	(0.5) U	(0.5) U	<b>2800</b>	-	-	(0.5) U	(0.5) U	(0.5) U	(0.5) U	(0.5) U
cis-1,2-Dichloroethene	156-59-2	70	-	-	1.6	1.6	(4.8) U	-	-	8.9	<b>70</b>	<b>82</b>	<b>84</b>	(0.2) U
Tetrachloroethene	127-18-4	1	-	-	0.7	0.6	(6.2) U	-	-	<b>7.4</b>	<b>15</b>	<b>18</b>	<b>16</b>	<b>1.3</b>
Trichloroethylene	79-01-6	1	-	-	0.6	0.5	(3.6) U	-	-	<b>4.5</b>	<b>21</b>	<b>24</b>	<b>23</b>	0.6
Vinyl Chloride	75-01-4	5	-	-	(0.5) U	(0.5) U	(11) U	-	-	(0.5) U	<b>28</b>	<b>34</b>	<b>34</b>	(0.5) U
Total VOCs	--	--	-	-	9.6	9	3126	-	-	23.7	138.5	162.9	161.9	19.8
Total Tics	--	100/500	-	-	ND	ND	ND	-	-	ND	ND	ND	ND	ND
<b>Metals</b>														
Arsenic	7440-38-2	8	360	190	-	-	-	(3.4) U	(3.4) U	-	-	-	-	-
Chromium	7440-47-3	100	16	11	-	-	-	NR	NR	-	-	-	-	-
Lead	7439-92-1	10	48	16	-	-	-	(2.2) U	(2.2) U	-	-	-	-	-

**NOTES:**

All results are reported in micrograms per liter (µg/L).

Depths are reported in feet (ft) below top of well casing.

Sample IDs ending in "P" indicate that it is a duplicate sample.

CAS\_RN = Chemical Abstracts Service Registry Number

NJDEP GWQS = New Jersey Department of Environmental

Protection Groundwater Quality Standards

TICs = Tentatively Identified Compounds

U - Indicates that the analyte was not detected at the Method

Detection Limit (MDL) shown in parenthesis.

- = Not Sampled

ND = Not Detected

**Bold** indicates that the concentration exceeds the NJDEP GWQS

**TABLE 10**  
**GROUNDWATER EXCEEDANCE SUMMARY**  
Baseline Ecological Evaluation  
Ingersoll-Rand Co.  
Phillipsburg, NJ

Field ID			MW30	MW30Dis	MW32		MW33A		MW34			MW35	
Lab ID			468970	468977	463790	463791	463786	463787	463783	463784	463785	463781	463782
Depth					117.5 - 118.5	128.5 - 129.5	106.5 - 107.5	119.5 - 120.5	107.5 - 108.5	112.5 - 113.5	119.5 - 120.5	121.5 - 122.5	127.5 - 128.5
Sample Date			10/6/2003	10/6/2003	09/23/03	09/23/03	09/23/03	09/23/03	09/23/03	09/23/03	09/23/03	09/23/03	09/23/03
Volatiles Organic Compounds													
	CSA_RN	GWQS											
1,1,1-Trichloroethane	71-55-6	30	-	-	7.6	4.8	0.4	0.3	1.5	4	1.5	1.8	<b>110</b>
1,1-Dichloroethane	75-34-3	50	-	-	5.4	3.7	(0.2) U	(0.2) U	5.7	7	0.7	0.8	<b>310</b>
1,1-Dichloroethylene	75-35-4	2	-	-	<b>3.8</b>	<b>2.7</b>	(0.4) U	0.8	1.3	1.9	0.6	0.6	<b>16</b>
1,2-Dichloroethane	107-06-2	2	-	-	(0.3) U	(0.3) U	(0.3) U	(0.3) U	(0.3) U	(0.3) U	(0.3) U	(0.3) U	<b>24</b>
Carbon tetrachloride	56-23-5	2	-	-	(0.2) U	(0.2) U	(0.2) U	(0.2) U	(0.2) U	(0.2) U	(0.2) U	(0.2) U	(1.9) U
Chloroethane	75-00-3	100	-	-	(0.5) U	(0.5) U	(0.5) U	(0.5) U	(0.5) U	(0.5) U	(0.5) U	(0.5) U	<b>1200</b>
cis-1,2-Dichloroethene	156-59-2	70	-	-	0.3	(0.2) U	(0.2) U	(0.2) U	2.2	3.6	7.6	9	5.7
Tetrachloroethene	127-18-4	1	-	-	<b>1.9</b>	0.7	<b>1.3</b>	(0.3) U	(0.3) U	0.4	<b>9.6</b>	<b>4.9</b>	(3.1) U
Trichloroethylene	79-01-6	1	-	-	0.7	0.4	0.3	(0.2) U	0.8	<b>1.5</b>	<b>4.1</b>	<b>4.2</b>	(1.8) U
Vinyl Chloride	75-01-4	5	-	-	(0.5) U	(0.5) U	(0.5) U	(0.5) U	(0.5) U	(0.5) U	(0.5) U	(0.5) U	<b>24</b>
Total VOCs	--	--	-	-	19.7	12.3	2	1.3	11.5	18.7	24.1	21.3	1689.7
Total Tics	--	100/500	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Metals													
Arsenic	7440-38-2	8	(3.4) U	(3.4) U	-	-	-	-	-	-	-	-	-
Chromium	7440-47-3	100	NR	NR	-	-	-	-	-	-	-	-	-
Lead	7439-92-1	10	(2.2) U	(2.2) U	-	-	-	-	-	-	-	-	-

**NOTES:**

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ND = Not Detected

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**TABLE 10**  
**GROUNDWATER EXCEEDANCE SUMMARY**  
Baseline Ecological Evaluation  
Ingersoll-Rand Co.  
Phillipsburg, NJ

Field ID			MW36	MW36Diss	MW37			MW39	MW39Diss	RW09				
Lab ID			471923	471924	463775	463776	463777	471925	471926	463805	463806	463807	463808	463809
Depth					59.5 - 60.5	85.5 - 86.5	97.5 - 98.5	133	133	89.5 - 90.5	117.5 - 118.5	146.5 - 147.5	159.5 - 160.5	187.5 - 188.5
Sample Date			10/13/2003	10/13/2003	09/23/03	09/23/03	09/23/03	10/13/2003	10/13/2003	09/23/03	09/23/03	09/23/03	09/23/03	09/23/03
Volatle Organic Compounds														
	CSA_RN	GWQS												
1,1,1-Trichloroethane	71-55-6	30	-	-	<b>120</b>	<b>35</b>	<b>80</b>	-	-	7.3	4.5	4.7	5.4	3.3
1,1-Dichloroethane	75-34-3	50	-	-	<b>280</b>	<b>230</b>	26	-	-	5.9	7.3	7.6	1.2	0.9
1,1-Dichloroethylene	75-35-4	2	-	-	<b>19</b>	<b>14</b>	<b>4.7</b>	-	-	<b>4.2</b>	1.9	<b>2</b>	<b>3.1</b>	<b>1.7</b>
1,2-Dichloroethane	107-06-2	2	-	-	1.6	<b>2.4</b>	(0.3) U	-	-	(0.3) U	(0.3) U	(0.3) U	(0.3) U	(0.3) U
Carbon tetrachloride	56-23-5	2	-	-	(1) U	(0.4) U	(0.2) U	-	-	(0.2) U	(0.2) U	(0.2) U	(0.2) U	(0.2) U
Chloroethane	75-00-3	100	-	-	94	87	(0.5) U	-	-	(0.5) U	(0.5) U	(0.5) U	(0.5) U	(0.5) U
cis-1,2-Dichloroethene	156-59-2	70	-	-	6.2	6.5	(0.2) U	-	-	(0.2) U	3.8	3.7	0.5	(0.2) U
Tetrachloroethene	127-18-4	1	-	-	(1.6) U	(0.6) U	<b>2</b>	-	-	<b>1.4</b>	0.5	0.7	<b>2.9</b>	<b>2.6</b>
Trichloroethylene	79-01-6	1	-	-	<b>4.4</b>	<b>2.6</b>	<b>6.6</b>	-	-	0.6	<b>1.7</b>	<b>1.7</b>	<b>6.5</b>	<b>3.6</b>
Vinyl Chloride	75-01-4	5	-	-	<b>14</b>	<b>26</b>	(0.5) U	-	-	(0.5) U	(0.5) U	(0.5) U	(0.5) U	(0.5) U
Total VOCs	--	--	-	-	539.2	403.5	119.3	-	-	19.4	20.1	20.7	19.6	12.1
Total Tics	--	100/500	-	-	ND	ND	ND	-	-	ND	ND	ND	ND	ND
Metals														
Arsenic	7440-38-2	8	(3.4) U	(3.4) U	-	-	-	(3.4) U	(3.4) U	-	-	-	-	-
Chromium	7440-47-3	100	NR	NR	-	-	-	NR	NR	-	-	-	-	-
Lead	7439-92-1	10	(2.2) U	(2.2) U	-	-	-	9.5	(2.2) U	-	-	-	-	-

**NOTES:**

All results are reported in micrograms per liter (µg/L).

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TICs = Tentatively Identified Compounds

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ND = Not Detected

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**TABLE 10**  
**GROUNDWATER EXCEEDANCE SUMMARY**  
Baseline Ecological Evaluation  
Ingersoll-Rand Co.  
Phillipsburg, NJ

Field ID			RW09	RW09Diss	RW11		RW11	RW11Diss	RW14		RW15		
Lab ID			465536	465557	463796	463797	465535	465556	463788	463789	463798	463799	463800
Depth			119	119	114.5 - 115.5	169.5 - 170.5	120	120	117.5 - 118.5	164.5 - 165.5	112.5 - 113.5	134.5 - 135.5	155.5 - 156.5
Sample Date			9/26/2003	09/23/03	09/23/03	09/23/03	9/26/2003	09/23/03	09/23/03	09/23/03	09/23/03	09/23/03	09/23/03
Volatiles Organic Compounds													
	CSA_RN	GWQS											
1,1,1-Trichloroethane	71-55-6	30	-	-	3.1	3.1	-	-	4.1	<b>140</b>	<b>150</b>	(0.2) U	(0.2) U
1,1-Dichloroethane	75-34-3	50	-	-	(0.2) U	(0.2) U	-	-	(0.2) U	<b>50</b>	49	(0.2) U	(0.2) U
1,1-Dichloroethylene	75-35-4	2	-	-	0.9	0.9	-	-	0.8	<b>8.2</b>	<b>9.5</b>	(0.4) U	(0.4) U
1,2-Dichloroethane	107-06-2	2	-	-	(0.3) U	(0.3) U	-	-	(0.3) U	(0.5) U	(0.3) U	(0.3) U	(0.3) U
Carbon tetrachloride	56-23-5	2	-	-	(0.2) U	(0.2) U	-	-	(0.2) U	(0.4) U	(0.2) U	<b>2</b>	<b>4.4</b>
Chloroethane	75-00-3	100	-	-	(0.5) U	(0.5) U	-	-	(0.5) U	(0.9) U	(0.5) U	(0.5) U	(0.5) U
cis-1,2-Dichloroethene	156-59-2	70	-	-	0.4	0.8	-	-	2.9	1.2	1.2	(0.2) U	(0.2) U
Tetrachloroethene	127-18-4	1	-	-	<b>1</b>	<b>1.4</b>	-	-	<b>3.2</b>	<b>4.3</b>	<b>6.2</b>	(0.3) U	(0.3) U
Trichloroethylene	79-01-6	1	-	-	<b>2.4</b>	<b>2.8</b>	-	-	<b>4.9</b>	<b>14</b>	<b>12</b>	<b>19</b>	<b>40</b>
Vinyl Chloride	75-01-4	5	-	-	(0.5) U	(0.5) U	-	-	(0.5) U	(1.1) U	(0.5) U	(0.5) U	(0.5) U
Total VOCs	--	--	-	-	7.8	9	-	-	15.9	217.7	227.9	21.5	45.1
Total Tics	--	100/500	-	-	ND	ND	-	-	ND	ND	ND	ND	ND
Metals													
Arsenic	7440-38-2	8	(3.2) U	(3.2) U	-	-	NR	NR	-	-	-	-	-
Chromium	7440-47-3	100	NR	NR	-	-	<b>108</b>	<b>93.2</b>	-	-	-	-	-
Lead	7439-92-1	10	(2.3) U	(2.3) U	-	-	NR	NR	-	-	-	-	-

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**TABLE 10**  
**GROUNDWATER EXCEEDANCE SUMMARY**  
Baseline Ecological Evaluation  
Ingersoll-Rand Co.  
Phillipsburg, NJ

Field ID			RW16		TH36		TH36	TH36Diss	THWLS	
Lab ID			463803	463804	463810	463811	471935	471936	463801	463802
Depth			120.5 - 121.5	141 - 142	109.5 - 110.5	109.5 - 110.5	110	110	109.5 - 110.5	122.5 - 123.5
Sample Date			09/23/03	09/23/03	09/23/03	09/23/03	10/15/2003	10/15/2003	09/23/03	09/23/03
Volatiles Organic Compounds										
	CSA_RN	GWQS								
1,1,1-Trichloroethane	71-55-6	30	(0.2) U	(0.2) U	(0.2) U	(0.2) U	-	-	(0.8) U	(0.8) U
1,1-Dichloroethane	75-34-3	50	(0.2) U	(0.2) U	(0.2) U	(0.2) U	-	-	(1.2) U	(1.2) U
1,1-Dichloroethylene	75-35-4	2	(0.4) U	0.7	1	0.8	-	-	(2.2) U	(2.2) U
1,2-Dichloroethane	107-06-2	2	(0.3) U	(0.3) U	(0.3) U	(0.3) U	-	-	(1.3) U	(1.3) U
Carbon tetrachloride	56-23-5	2	<b>3.7</b>	(0.2) U	(0.2) U	(0.2) U	-	-	(1) U	(1) U
Chloroethane	75-00-3	100	(0.5) U	(0.5) U	(0.5) U	(0.5) U	-	-	(2.3) U	(2.3) U
cis-1,2-Dichloroethene	156-59-2	70	(0.2) U	<b>96</b>	<b>160</b>	<b>140</b>	-	-	44	(1.2) U
Tetrachloroethene	127-18-4	1	(0.3) U	<b>1</b>	<b>1.7</b>	<b>1.3</b>	-	-	(1.6) U	(1.6) U
Trichloroethylene	79-01-6	1	<b>34</b>	<b>1.3</b>	<b>2.7</b>	<b>3</b>	-	-	(0.9) U	(0.9) U
Vinyl Chloride	75-01-4	5	(0.5) U	<b>52</b>	<b>65</b>	<b>72</b>	-	-	<b>280</b>	<b>380</b>
Total VOCs	--	--	38.2	151.7	231.2	218	-	-	324	380
Total Tics	--	100/500	ND	3.9	ND	ND	-	-	ND	ND
Metals										
Arsenic	7440-38-2	8	-	-	-	-	(3.4) U	(3.4) U	-	-
Chromium	7440-47-3	100	-	-	-	-	NR	NR	-	-
Lead	7439-92-1	10	-	-	-	-	(2.2) U	(2.2) U	-	-

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**TABLE 11**  
**SUMMARY OF POTENTIAL MITIGATION PATHWAYS**

Baseline Ecological Evaluation  
Ingersoll-Rand Co.  
Phillipsburg, NJ

Section	Contaminants of Potential Ecological Concern	Is a Complete Chemical Migration Pathway Identified?	Why the Chemical Migration Pathway is Incomplete?
2A	Metals, TPHC, BN, VOCs	No	Vegetative cover eliminates the potential for soil contaminant migration via runoff/erosion as well as potential for direct soil ingestion by ESA species; Surface runoff pathway addressed in 2002 BEE (no further evaluation required); no habitat for T&E species to complete pathway between T&E species and soil contaminants
2B	Metals, TPHC, VOCs	No	Paved surfaces; surface runoff treated via Spray and Inverse Ponds, no further investigation required per 2002 BEE
5	Metals, TPHC, BN	No	Vegetative cover eliminates the potential for soil contaminant migration via runoff/erosion as well as potential for direct soil ingestion by ESA species; Surface runoff discharges to stormwater detention pond prior to discharge to municipal storm sewer; no habitat for T&E species to complete pathway between T&E species and soil contaminants
6A	Metals, TPHC, BN, VOCs	No	Paved surfaces; surface runoff treated via Spray and Inverse Ponds, no further investigation required per 2002 BEE
6B	TPHC	No	Paved surfaces; surface runoff treated via Spray and Inverse Ponds, no further investigation required per 2002 BEE
6C	Metals, TPHC, PCBs, BN	No	Surface runoff pathway addressed in 2002 BEE (no further evaluation required); no habitat for T&E species to complete pathway between T&E species and soil contaminants
6D	Metals, BN	No	Paved surfaces; surface runoff treated via Spray and Inverse Ponds, no further investigation required per 2002 BEE
7	Metals, TPHC, BN	No	No exposed soil was observed in this Section, thus eliminating potential discharge of contaminants via erosion and/or direct ingestion of contaminated soils by ESA species. Surface runoff pathway addressed in 2002 BEE (no further evaluation required); no habitat for T&E species to complete pathway between T&E species and soil contaminants
Groundwater	Oil, Metals, VOCs	No	Groundwater COPEC (chromium observed at RW-11) does not discharge off-site, therefore no complete pathway between contaminant and surface water ESAs; groundwater from other portions of site which may discharge to surface water ESAs does not contain COPECs.

**NOTES:**

PCB = Polychlorinated Biphenyls

TPH = Total Petroleum Hydrocarbons

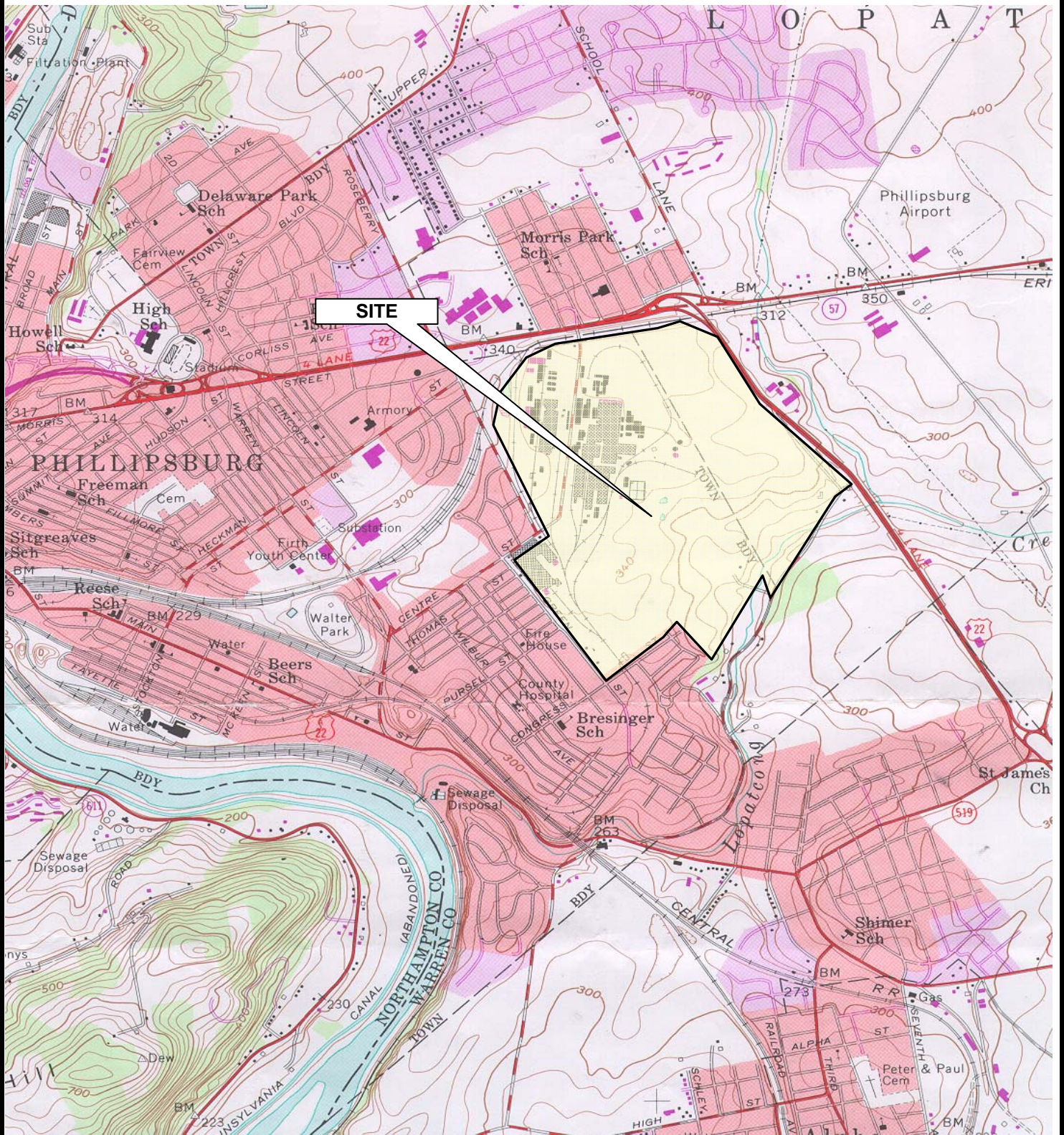
VOC = Volatile Organic Compounds

BN = Base Neutral Organic Compounds

COPEC = Compounds of Potential Ecological Concern.

## FIGURES





**Source:**

USGS 7.5' Topographic  
Quadrangle - Easton, NJ-PA  
1954 - Photorevised 1981

**Client:**

Ingersoll Rand Company  
Design/Review: GM/CV  
Scale: 1:24,000  
Date: 04/22/03

**Figure Title:**

**FIGURE 1**  
**USGS Site Location Map**  
Ingersoll-Rand - Phillipsburg, New Jersey

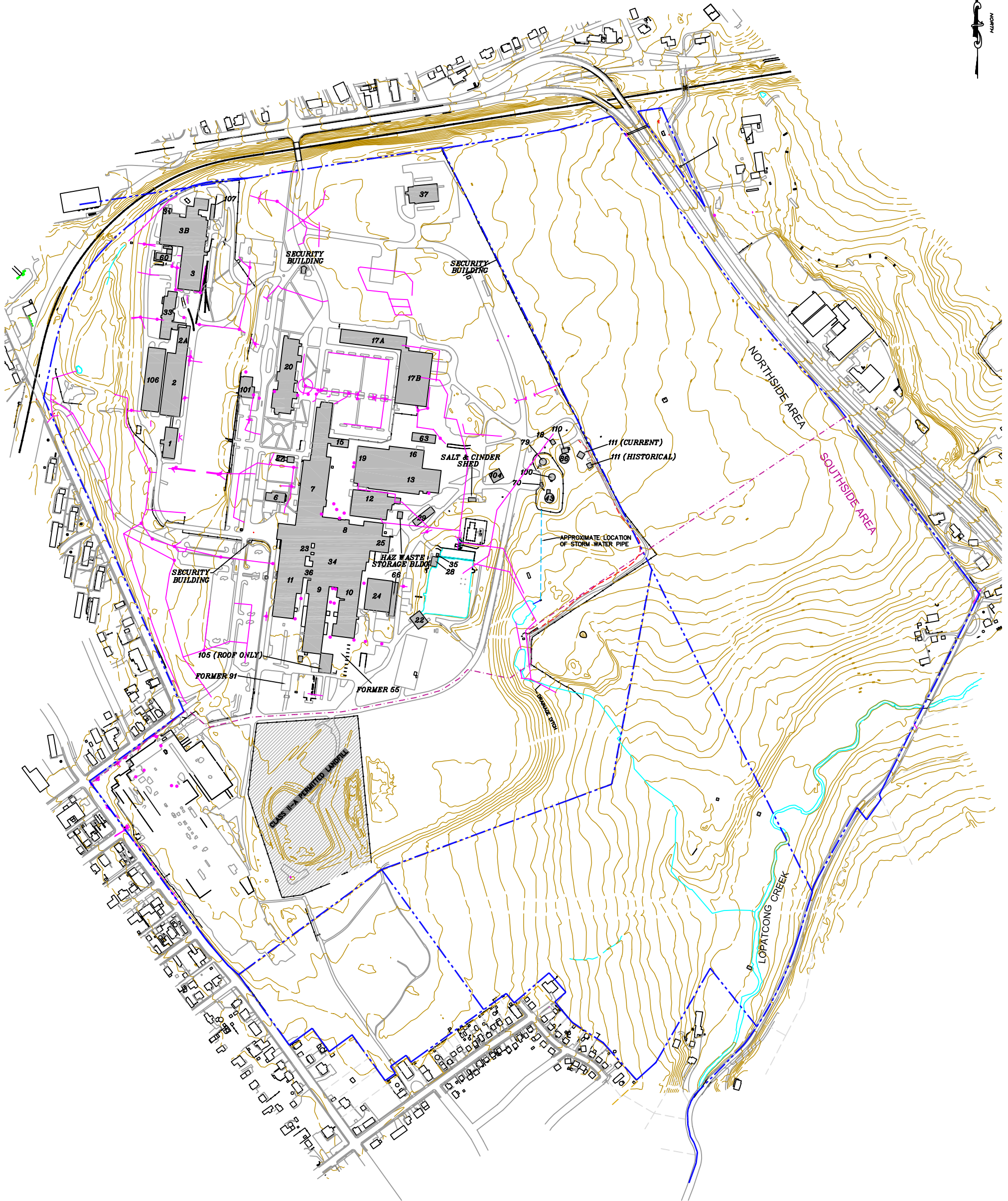
Project No.: 03710-162







Project: Ingersoll Rand (03710-162) Land Use Final Site Plan.dwg

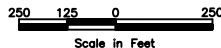


Legend

- 101 BUILDING ID NUMBER
- CATCH BASIN
- STORM SEWER LINE
- PROPERTY BOUNDARY
- CONTOUR (SHOWN IN 5 FOOT INTERVALS)
- OPEN WATER
- SOUTHSIDE AREA BOUNDARY

Notes:

- PROPERTY LINES SHOWN HERON ARE BASED ON A DRAWING ENTITLED "SURVEY OF LANDS FOR INGERSOLL - RAND CO.," PREPARED BY STUDER & McELDOWNEY, P.A., DRAWING NO. 1590-G, DATED AUGUST 15, 2003; AND ON A DRAWING ENTITLED "SURVEY OF LANDS FOR INGERSOLL - RAND COMPANY," PREPARED BY STUDER & McELDOWNEY, P.A., DRAWING NO. 1147-G, DATED FEBRUARY 7, 1992, LAST REVISED JUNE 15, 1992.
- TOWNSHIP OF LOPATCONG: TAX MAP SHEET 4, BLOCK 101, LOT 1, BLOCK 100, LOT 1  
TOWNSHIP OF PHILLIPSBURG: TAX MAP SHEET 32, BLOCK 3201, LOT 7, TAX MAP SHEET 33, BLOCK 3301, LOTS 1, 2 & 4



SITE PLAN  
INGERSOLL RAND COMPANY  
PHILLIPSBURG, NEW JERSEY

SCALE: AS SHOWN      DATE: 08/06/04      PROJECT NUMBER: 03710-162



20 NEW ENGLAND AVENUE  
PISCATAWAY, NEW JERSEY 08854  
PHONE: (732) 981-0200  
FAX: (732) 981-0116  
WEB: HTTP://WWW.ENSUR.COM

DESIGNED BY:	REVISIONS			
	NO.:	DESCRIPTION:	DATE:	BY:
DL				
DRAWN BY:				
/jk				
CHECKED BY:				
APPROVED BY:				

2

SHEET NUMBER:  
1 of 1

FIGURE NUMBER:

Project: Ingersoll Rand (03710-162) Land Use Final Site Plan.dwg





**Legend**

- AREA OF CONCERN
- PROPERTY BOUNDARY
- CONTOUR (SHOWN IN 5 FOOT INTERVALS)
- OPEN WATER
- SOUTHSIDE AREA BOUNDARY
- SECTION 6C
- SECTION 6C

**Notes:**

1. PROPERTY LINES SHOWN HEREON ARE BASED ON A DRAWING ENTITLED "SURVEY OF LANDS FOR INGERSOLL - RAND CO." PREPARED BY STUDER & McELDOWNNEY, P.A., DRAWING NO. 1590-G, DATED AUGUST 15, 2003; AND ON A DRAWING ENTITLED "SURVEY OF LANDS FOR INGERSOLL - RAND COMPANY," PREPARED BY STUDER & McELDOWNNEY, P.A., DRAWING NO. 1147-G, DATED FEBRUARY 7, 1992, LAST REVISED JUNE 15, 1992.
2. TOWNSHIP OF LOBATCONG: TAX MAP SHEET 4, BLOCK 101, LOT 1, BLOCK 100, LOT 1  
TOWNSHIP OF PHILLIPSBURG: TAX MAP SHEET 32, BLOCK 3201, LOT 7, TAX MAP SHEET 33, BLOCK 3301, LOTS 1, 2 & 4



3

**MAP OF SECTIONS OF CONCERN FOR  
BASELINE ECOLOGICAL EVALUATION**  
INGERSOLL RAND COMPANY  
PHILLIPSBURG, NEW JERSEY

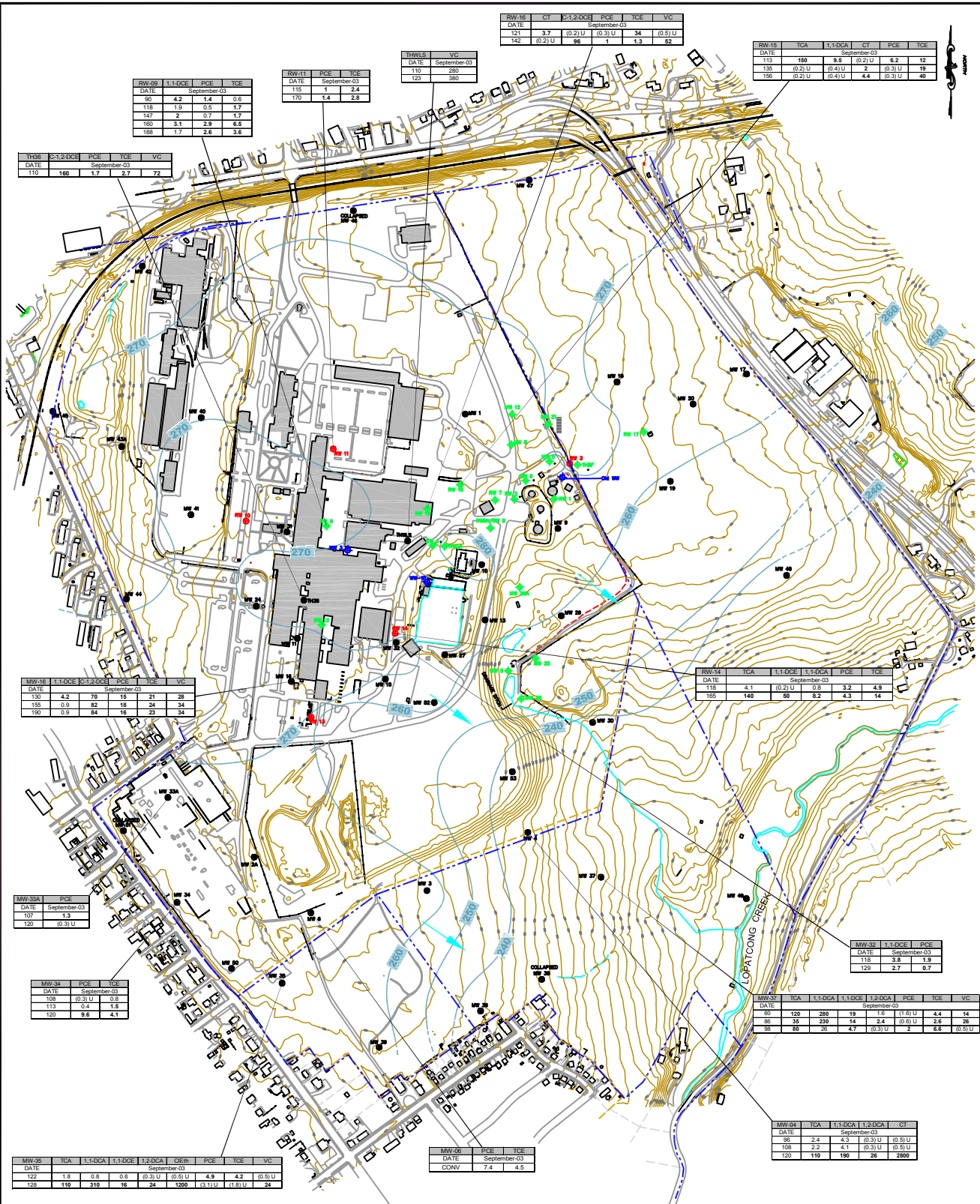
SCALE: AS SHOWN DATE: 08/06/04 PROJECT NUMBER: 03710-162

**ENSR**  
INTERNATIONAL  
20 NEW ENGLAND AVENUE  
PISCATAWAY, NEW JERSEY 08854  
PHONE: (732) 981-0200  
FAX: (732) 981-0116  
WEB: HTTP://WWW.ENSR.COM

DESIGNED BY:	DL	NO.	DESCRIPTION	DATE	BY:
DRAWN BY:	/k				
CHECKED BY:					
APPROVED BY:					

3: Map of Sections of Concern for Baseline Ecological Evaluation

1 of 1



**Legend**

- PROPERTY BOUNDARY
- TOPOGRAPHY (SHOWN IN 5 FOOT INTERVALS)
- GROUNDWATER DELINEATION
- DIRECTION OF GROUNDWATER FLOW
- MONITORING WELL
- RECOVERY WELL
- PRODUCTION WELL
- WELL WITH LNAPL IMPACT

(NE) = NO EXCEEDANCES  
 NS = NOT SAMPLED  
 ND = NOT DETECTED  
 LPH = LIQUID PHASE HYDROCARBON

**Notes:**

- PROPERTY LINES SHOWN HEREON ARE BASED ON A DRAWING ENTITLED "SURVEY OF LANDS FOR INGERSOLL - RAND CO.," PREPARED BY STUDDER & McLEODNEY, P.A., DRAWING NO. 1590-G, DATED AUGUST 15, 2003; AND ON A DRAWING ENTITLED "SURVEY OF LANDS FOR INGERSOLL - RAND COMPANY," PREPARED BY STUDDER & McLEODNEY, P.A., DRAWING NO. 1147-G, DATED FEBRUARY 7, 1992, LAST REVISED JUNE 15, 1992.
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 TOWNSHIP OF PHILLIPSBURG: TAX MAP SHEET 32, BLOCK 3201, LOT 7, TAX MAP SHEET 33, BLOCK 3301, LOTS 1, 2 & 4

**KEY**

ANALYTES:	GWQS
CIETH Chloroethane	100
CT Carbon Tetrachloride	2
1,1-DCA 1,1-Dichloroethane	50
1,2-DCA 1,2-Dichloroethane	2
1,1-DCE 1,1-Dichloroethene	2
cis-1,2-DCE cis-1,2-Dichloroethene	70
TCA 1,1,1-Trichloroethane	30
TCE Trichloroethylene	1
PCE Tetrachloroethene	1
VC Vinyl Chloride	5

**SUMMARY OF GROUNDWATER ANALYTICAL RESULTS FALL 2003**

INGERSOLL RAND COMPANY  
 PHILLIPSBURG, NEW JERSEY

SCALE: AS SHOWN DATE: 08/05/04 PROJECT NUMBER: 03710-162

**ENSR INTERNATIONAL**

20 NEW ENGLAND AVENUE  
 PISCATAWAY, NEW JERSEY 08854  
 PHONE: (732) 981-0200  
 FAX: (732) 981-0116  
 WEB: HTTP://WWW.ENSR.COM

**DESIGNED BY:** DL

**DRAWN BY:** /k

**CHECKED BY:**

**APPROVED BY:**

## **APPENDIX A**

### **PHOTOGRAPHS**





**Photo 1:** North facing view of Section 2A. This portion of Section 2A contains manicured lawn and red oak (*Quercus rubra*) trees north of Building 17A.



**Photo 2:** North facing view of Section 2A. This area contains tree-of-heaven (*Ailanthus altissima*), wild bergamot (*Monarda fistulosa*) and various goldenrod species (*Solidago sp.*). Vegetation is growing through concrete.



**Photo 3:** West facing view of Section 2A; shows wild bergamot (*Monarda fistulosa*) and goldenrod (*Solidago sp.*). Runoff flows through this area from manicured lawns on both sides.



**Photo 4:** West facing view of culvert within eastern extent of Section 2A along Loop Road.





**Photo 5:** South facing view of Section 2B. This is the parking lot between Buildings 17A and 17B.



**Photo 6:** North facing view of Section 5 containing maintained lawn.



**Photo 7:** East facing view of Section 5. The field is draining from Buildings 7, 11 and 20 into the field east of Buildings 1 and 2.



**Photo 8:** West facing view of Section 5 from the foundry area containing maintained lawn, red oak (*Quercus rubra*) and black birch (*Betula lenta*).

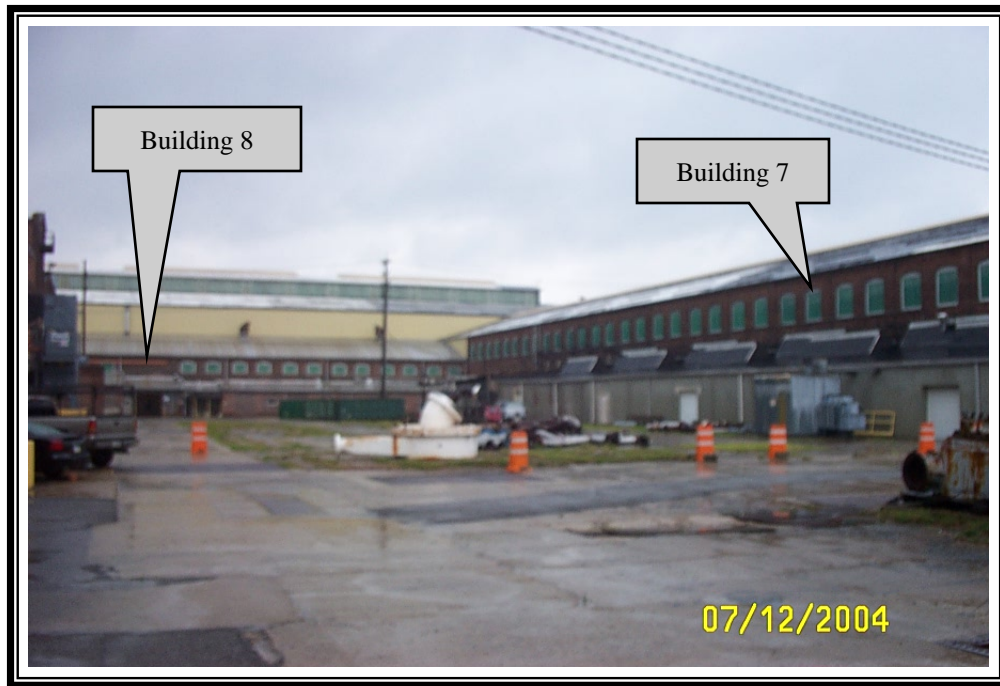




**Photo 9:** West facing view of wetland area within Section 5. Crown vetch (*Coronilla varia*) and goldenrod (*Solidago sp.*) species, purple loosestrife (*Lythrum salicaria*), and broad-leaved cattail (*Typha latifolia*) present. The area displayed was delineated by ENSR in 2002.



**Photo 10:** View of an adult female wild turkey (*Meleagris gallopavo*) observed in Section 5.

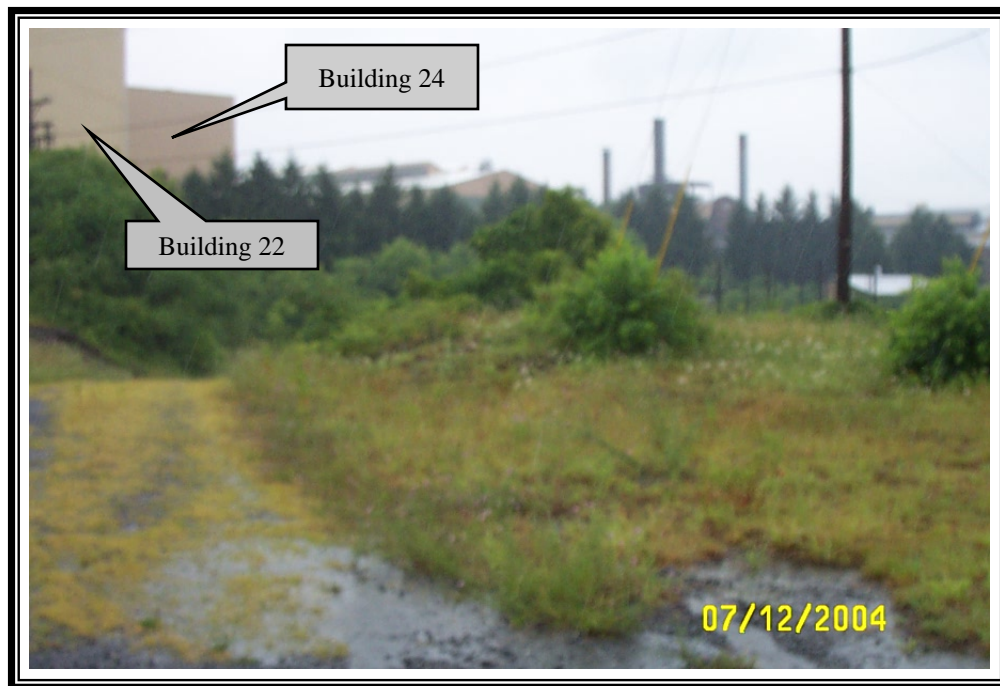


**Photo 11:** Southwest facing view of Section 6A. Disturbed vegetation is growing through concrete.



**Photo 12:** East facing view of Section 6B. Building 12 is shown. Grass is growing through concrete.





**Photo 13:** Northwest view within Section 6C. Road leading to the spray pond is shown. Surrounding vegetation includes tree-of-heaven (*Ailanthus altissima*), honeysuckle (*Lonicera sp.*), wild bergamot (*Monarda fistulosa*) and Queen Anne's Lace (*Daucus carota*).



**Photo 14:** Southwest corner of spray pond. This area is within Section 6C.



**Photo 15:** Exposed soil on the south side of the road leading to the spray pond. This is in Section 6C.



**Photo 16:** Northwest facing view toward the spray pond within Section 6C. Vegetation present includes Queen Anne's Lace (*Daucus carota*), tree-of-heaven (*Ailanthus altissima*) saplings, crown vetch (*Coronilla varia*), yellow foxtail (*Setaria glauca*) and goldenrod species (*Solidago* sp.).





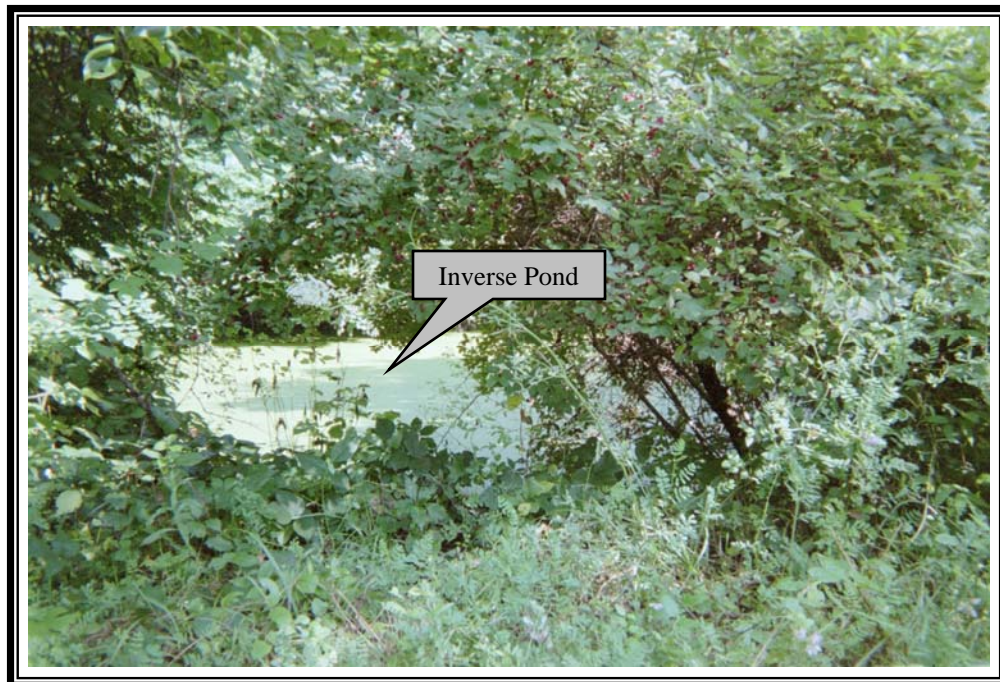
**Photo 17:** Northwest facing view of Section 6C. (Section 6D is in the background.) Wildflowers growing through gravel and fill including wild bergamot (*Monarda fistulosa*) and Queen Anne's Lace (*Daucus carota*).



**Photo 18:** North facing view of Section 6C. Wildflowers present include wild bergamot (*Monarda fistulosa*), yellow foxtail (*Alopecurus sp.*), Queen Anne's Lace (*Daucus carota*), and various goldenrod species (*Solidago sp.*).

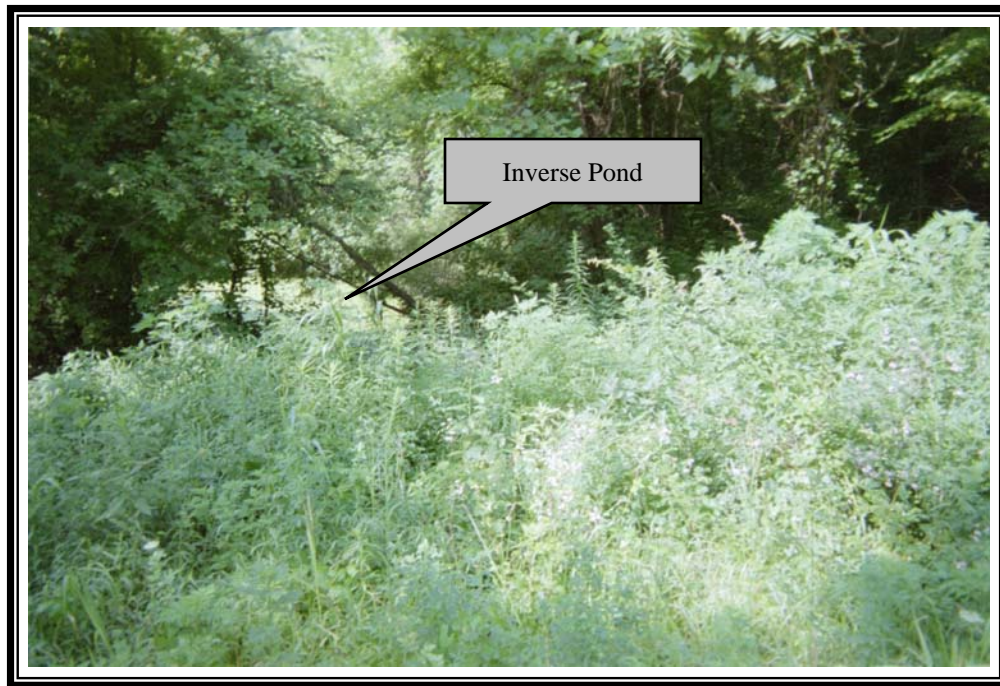


**Photo 19:** Southwest facing view within Section 6C. This field is the Old Landfill. There are patches of exposed soil. Vegetation includes grass, various caryx sedges, and viper's bugloss (*Echium vulgare*)



**Photo 20:** View of dense vegetation surrounding southeastern inverse pond within Section 6C (Grid 7). Vegetation present includes crown vetch (*Coronilla varia*), poison ivy (*Toxicodendron radicans*), red maple (*Acer rubra*), tree-of-heaven (*Ailanthus altissima*) daisy fleabane (*Erigeron annuus*), mint (*Mentha sp.*) and various goldenrod (*Solidago sp.*) species.





**Photo 21:** View of southeastern inverse pond within Section 6C with daisy fleabane (*Erigeron annuus*), goldenrod (*Solidago sp.*), and mint (*Mentha sp.*) visible in the foreground.



**Photo 22:** View of southeastern inverse pond within Section 6C. ENSR's wetland flag from July 2003 delineation visible.



**Photo 23:** West facing view of Section 6D. South end of Building 9 shown. Disturbed vegetation including Virginia creeper (*Parthenocissus quinquefolia*) growing through concrete.



**Photo 24:** South facing view of Section 6D. This area is south of Buildings 9, 10 and 11 between Loop Road and north of cut-through road. Wild bergamot (*Monarda fistulosa*) is growing through concrete. The New Landfill is to the South.





**Photo 25:** West facing view of Section 7 containing maintained lawn.



**Photo 26:** View looking west of Lopatcong Creek facing downstream.



**Photo 27:** View of Lopatcong Creek. This Environmentally Sensitive Area (ESA) is a Category One freshwater trout production stream. It is located off Site (Grid 8).



**Photo 28:** Deer tracks present on the bank of Lopatcong Creek.





**Photo 29:** View of raccoon (*Procyon lotor*) tracks located near the Lopatcong Creek.

## **APPENDIX B**

### **AGENCY CORRESPONDENCE**





# State of New Jersey

James E. McGreevey  
Governor

Department of Environmental Protection  
Division of Parks and Forestry  
Office of Natural Lands Management  
Natural Heritage Program  
P.O. Box 404  
Trenton, NJ 08625-0404  
Tel. #609-984-1339  
Fax. #609-984-1427

Bradley M. C  
Commiss

July 1, 2004

Diana G. Loya  
ENSR International  
20 New England Avenue  
Piscataway, NJ 08854

Re: Ingersoll-Rand Company, 942 Memorial Parkway, Phillipsburg, NJ 08865

Dear Ms. Loya:

Thank you for your data request regarding rare species information for the above referenced project site in Phillipsburg Town and Lopatcong Township, Warren County.

Searches of the Natural Heritage Database and the Landscape Project (Version 2) are based on a representation of the boundaries of your project site in our Geographic Information System (GIS). We make every effort to accurately transfer your project bounds from the topographic map(s) submitted with the Request for Data into our Geographic Information System. We do not typically verify that your project bounds are accurate, or check them against other sources.

We have checked the Natural Heritage Database and the Landscape Project habitat mapping for occurrences of any rare wildlife species or wildlife habitat on the referenced site. Please see Table 1 for species list and conservation status.

Table 1 (on referenced site).

Common Name	Scientific Name	Federal Status	State Status	Grank	Srank
eastern meadowlark	<i>Sturnella magna</i>		D/S	G5	S3B,S4N

We have also checked the Natural Heritage Database and the Landscape Project habitat mapping for occurrences of any rare wildlife species or wildlife habitat within 1/4 mile of the referenced site. Please see Table 2 for species list and conservation status. This table excludes any species listed in Table 1.

Table 2 (additional species within 1/4 mile of referenced site).

Common Name	Scientific Name	Federal Status	State Status	Grank	Srank
bobolink	<i>Dolichonyx oryzivorus</i>		T/T	G5	S2B
savannah sparrow	<i>Passerculus sandwichensis</i>		T/T	G5	S2B,S4N
vesper sparrow	<i>Poocetes gramineus</i>		E	G5	S1B,S2N

We have also checked the Natural Heritage Database for occurrences of rare plant species or natural communities. The Natural Heritage Data Base does not have any records for rare plants or natural communities on or within 1/4 mile of the site.

Attached is a list of rare species and natural communities that have been documented from Warren County. If suitable habitat is present at the project site, these species have potential to be present.

Status and rank codes used in the tables and lists are defined in the attached EXPLANATION OF CODES USED IN NATURAL HERITAGE REPORTS.

If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend that you visit the interactive I-Map-NJ website at the following URL, <http://www.state.nj.us/dep/gis/imapnj/imapnj.htm> or contact the Division of Fish and Wildlife, Endangered and Nongame Species Program.

PLEASE SEE THE ATTACHED 'CAUTIONS AND RESTRICTIONS ON NHP DATA'.

Thank you for consulting the Natural Heritage Program. The attached invoice details the payment due for processing this data request. Feel free to contact us again regarding any future data requests.

Sincerely,

*Herbert A. Lord*

Herbert A. Lord  
Data Request Specialist

cc: Robert J. Cartica  
Lawrence Niles  
NHP File No. 04-4007562

## CAUTIONS AND RESTRICTIONS ON NATURAL HERITAGE DATA

The quantity and quality of data collected by the Natural Heritage Program is dependent on the research and observations of many individuals and organizations. Not all of this information is the result of comprehensive or site-specific field surveys. Some natural areas in New Jersey have never been thoroughly surveyed. As a result, new locations for plant and animal species are continuously added to the database. Since data acquisition is a dynamic, ongoing process, the Natural Heritage Program cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of New Jersey. Information supplied by the Natural Heritage Program summarizes existing data known to the program at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. The attached data is provided as one source of information to assist others in the preservation of natural diversity.

This office cannot provide a letter of interpretation or a statement addressing the classification of wetlands as defined by the Freshwater Wetlands Act. Requests for such determination should be sent to the DEP Land Use Regulation Program, P.O. Box 401, Trenton, NJ 08625-0401.

The Landscape Project was developed by the Division of Fish & Wildlife, Endangered and Nongame Species Program to map critical habitat for rare animal species. Some of the rare species data in the Landscape Project is in the Natural Heritage Database, while other records were obtained from other sources. Natural Heritage Database response letters will list all species (if any) found during a search of the Landscape Project. However, any reports that are included with the response letter will only reference specific records if they are in the Natural Heritage Database. This office cannot answer any inquiries about the Landscape Project. All questions should be directed to the DEP Division of Fish and Wildlife, Endangered and Nongame Species Program, P.O. Box 400, Trenton, NJ 08625-0400.

**This cautions and restrictions notice must be included whenever information provided by the Natural Heritage Database is published.**



NJ Department of Environmental Protection  
Division of Parks and Forestry

Natural Lands Management

## EXPLANATIONS OF CODES USED IN NATURAL HERITAGE REPORTS

### FEDERAL STATUS CODES

The following U.S. Fish and Wildlife Service categories and their definitions of endangered and threatened plants and animals have been modified from the U.S. Fish and Wildlife Service (F.R. Vol. 50 No. 188; Vol. 61, No. 40; F.R. 50 CFR Part 17). Federal Status codes reported for species follow the most recent listing.

- LE Taxa formally listed as endangered.
- LT Taxa formally listed as threatened.
- PE Taxa already proposed to be formally listed as endangered.
- PT Taxa already proposed to be formally listed as threatened.
- C Taxa for which the Service currently has on file sufficient information on biological vulnerability and threat(s) to support proposals to them as endangered or threatened species.
- S/A Similarity of appearance species.

### STATE STATUS CODES

Two animal lists provide state status codes after the Endangered and Nongame Species Conservation Act of 1973 (N.J.S.A. 23:2A-13 et. seq.): the list of endangered species (N.J.A.C. 7:25-4.13) and the list defining status of indigenous, nongame wildlife species of New Jersey (N.J.A.C. 7:25-4.17(a)). The status of animal species is determined by the Nongame and Endangered Species Program (ENSP). The state status codes and definitions provided reflect the most recent lists that were revised in the New Jersey Register, Monday, June 3, 1991.

- D Declining species—a species which has exhibited a continued decline in population numbers over the years.
- E Endangered species—an endangered species is one whose prospects for survival within the state are in immediate danger due to one or many factors — a loss of habitat, over exploitation, predation, competition, disease. An endangered species requires immediate assistance or extinction will probably follow.
- EX Extirpated species—a species that formerly occurred in New Jersey, but is not now known to exist within the state.
- I Introduced species—a species not native to New Jersey that could not have established itself here without the assistance of man.
- INC Increasing species—a species whose population has exhibited a significant increase, beyond the normal range of its life cycle, over a long term period.
- T Threatened species—a species that may become endangered if conditions surrounding the species begin to or continue to deteriorate.
- P Peripheral species—a species whose occurrence in New Jersey is at the extreme edge of its present natural range.
- S Stable species—a species whose population is not undergoing any long-term increase/decrease within its natural cycle.
- U Undetermined species—a species about which there is not enough information available to determine the status.

Status for animals separated by a slash(/) indicate a dual status. First status refers to the state breeding population, and the second status refers to the migratory or winter population.

Plant taxa listed as endangered are from New Jersey's official Endangered Plant Species List N.J.S.A. 131B-15.151 et seq.

E Native New Jersey plant species whose survival in the State or nation is in jeopardy.

#### REGIONAL STATUS CODES FOR PLANTS

LP Indicates taxa listed by the Pinelands Commission as endangered or threatened within their legal jurisdiction. Not all species currently tracked by the Pinelands Commission are tracked by the Natural Heritage Program. A complete list of endangered and threatened Pineland species is included in the New Jersey Pinelands Comprehensive Management Plan.

#### EXPLANATION OF GLOBAL AND STATE ELEMENT RANKS

The Nature Conservancy has developed a ranking system for use in identifying elements (rare species and natural communities) of natural diversity most endangered with extinction. Each element is ranked according to its global, national, and state (or subnational in other countries) rarity. These ranks are used to prioritize conservation work so that the most endangered elements receive attention first. Definitions for element ranks are after The Nature Conservancy (1982: Chapter 4, 4.1-1 through 4.4.1.3-3).

#### GLOBAL ELEMENT RANKS

- G1 Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.
- G2 Imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.
- G3 Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single western state, a physiographic region in the East) or because of other factors making it vulnerable to extinction throughout its range; with the number of occurrences in the range of 21 to 100.
- G4 Apparently secure globally; although it may be quite rare in parts of its range, especially at the periphery.
- G5 Demonstrably secure globally; although it may be quite rare in parts of its range, especially at the periphery.
- GH Of historical occurrence throughout its range i.e., formerly part of the established biota, with the expectation that it may be rediscovered.
- GU Possibly in peril range-wide but status uncertain; more information needed.
- GX Believed to be extinct throughout range (e.g., passenger pigeon) with virtually no likelihood that it will be rediscovered.
- G? Species has not yet been ranked.

#### STATE ELEMENT RANKS

- S1 Critically imperiled in New Jersey because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres). Elements so ranked are often restricted to very specialized conditions or habitats and/or restricted to an extremely small geographical area of the state. Also included are elements which were formerly more abundant, but because of habitat destruction or some other critical factor in its biology, they have been demonstrably reduced in abundance. In essence, these are elements for which, even with intensive searching, sizable additional occurrences are unlikely to be discovered.

- S2 Imperiled in New Jersey because of rarity (6 to 20 occurrences). Historically many of these elements may have been more frequent but are now known from very few extant occurrences, primarily because of habitat destruction. Diligent searching may yield additional occurrences.
- S3 Rare in state with 21 to 100 occurrences (plant species in this category have only 21 to 50 occurrences). Includes elements which are widely distributed in the state but with small populations/acreage or elements with restricted distribution, but locally abundant. Not imperiled in state but may soon be if current trends continue. Searching often yields additional occurrences.
- S4 Apparently secure in state, with many occurrences.
- S5 Demonstrably secure in state and essentially ineradicable under present conditions.
- SA Accidental in state, including species (usually birds or butterflies) recorded once or twice or only at very great intervals, hundreds or thousands of miles outside their usual range; a few of these species may even have bred on the one or two occasions they were recorded. Examples include European strays or western birds on the East Coast and vice-versa.
- SE Elements that are clearly exotic in New Jersey including those taxa not native to North America (introduced taxa) or taxa deliberately accidentally introduced into the State from other parts of North America (adventive taxa). Taxa ranked SE are not a conservation priority (viable introduced occurrences of G1 or G2 elements may be exceptions).
- SH Elements of historical occurrence in New Jersey. Despite some searching of historical occurrences and/or potential habitat, no extant occurrences are known. Since not all of the historical occurrences have been field surveyed, and unsearched potential habitat remains, historically ranked taxa are considered possibly extant, and remain a conservation priority for continued field work.
- SP Element has potential to occur in New Jersey, but no occurrences have been reported.
- SR Elements reported from New Jersey, but without persuasive documentation which would provide a basis for either accepting or rejecting the report. In some instances documentation may exist, but as of yet, its source or location has not been determined.
- SRF Elements erroneously reported from New Jersey, but this error persists in the literature.
- SU Elements believed to be in peril but the degree of rarity uncertain. Also included are rare taxa of uncertain taxonomical standing. More information is needed to resolve rank.
- SX Elements that have been determined or are presumed to be extirpated from New Jersey. All historical occurrences have been searched and a reasonable search of potential habitat has been completed. Extirpated taxa are not a current conservation priority.
- SXC Elements presumed extirpated from New Jersey, but native populations collected from the wild exist in cultivation.
- SZ Not of practical conservation concern in New Jersey, because there are no definable occurrences, although the taxon is native and appears regularly in the state. An SZ rank will generally be used for long distance migrants whose occurrences during their migrations are too irregular (in terms of repeated visitation to the same locations), transitory, and dispersed to be reliably identified, mapped and protected. In other words, the migrant regularly passes through the state, but enduring, mappable element occurrences cannot be defined.

Typically, the SZ rank applies to a non-breeding population (N) in the state - for example, birds on migration. An SZ rank may in a few instances also apply to a breeding population (B), for example certain lepidoptera which regularly die out every year with no significant return migration.

Although the SZ rank typically applies to migrants, it should not be used indiscriminately. Just because a species is on migration does not mean it receives an SZ rank. SZ will only apply when the migrants occur in an irregular, transitory and dispersed manner.

- B Refers to the breeding population of the element in the state.
- N Refers to the non-breeding population of the element in the state.
- T Element ranks containing a "T" indicate that the infraspecific taxon is being ranked differently than the full species. For example *Stachys palustris* var. *homotricha* is ranked "G5T? SH" meaning the full species is globally secure but the global rarity of the var. *homotricha* has not been determined; in New Jersey the variety is ranked historic.
- Q Elements containing a "Q" in the global portion of its rank indicates that the taxon is of questionable, or uncertain taxonomical standing e.g., some authors regard it as a full species, while others treat it at the subspecific level.
- .1 Elements documented from a single location.

Note: To express uncertainty, the most likely rank is assigned and a question mark added (e.g., G2?). A range is indicated by combining two ranks (e.g., G1G2, S1S3).

#### IDENTIFICATION CODES

These codes refer to whether the identification of the species or community has been checked by a reliable individual and is indicative of significant habitat.

- Y Identification has been verified and is indicative of significant habitat.
- BLANK Identification has not been verified but there is no reason to believe it is not indicative of significant habitat.
- ? Either it has not been determined if the record is indicative of significant habitat or the identification of the species or community may be confusing or disputed.

27 JUN 2002

WARREN COUNTY  
RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN  
THE NEW JERSEY NATURAL HERITAGE DATABASE

NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	CRANK	SRANK
ACCIPITER COOPERII	COOPER'S HAWK		T/T		G5	S3B, S4N
ACRIS CREPITANS CREPITANS	NORTHERN CRICKET FROG		U		G5T5	S3
AMBYSTOMA JEFFERSONIANUM	JEFFERSON SALAMANDER		D		G4	S3
AMBYSTOMA MACULATUM	SPOTTED SALAMANDER		D		G5	S3
AMBYSTOMA OPACUM	MARBLED SALAMANDER		D		G5	S3
AMMODRAMUS SAVANNAHENSIS	GRASSHOPPER SPARROW		T/S		G5	S2B
ARDEA HERODIAS	GREAT BLUE HERON		S/S		G5	S2B, S4N
BATRAMIA LONGICAUDA	UPLAND SANDPIPER		E		G5	S1B
BOTAURUS LENTIGINOSUS	AMERICAN BITTERN		E/S		G4	S2B
BUTEO LINEATUS	RED-SHOULDERED HAWK		E/T		G5	S1B, S2N
CLEMmys INSCULPTA	WOOD TURTLE		T		G4	S3
CLEMmys MUhlenbergii	BOG TURTLE	LT	E		G3	S2
CROTALUS HORRIDUS HORRIDUS	TIMBER RATTLESNAKE		E		G4T4	S2
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2B
EURYCEA LONGICAUDA LONGICAUDA	LONGTAIL SALAMANDER		T		G5T5	S2
GRAPTOMYS GEOGRAPHICA	COMMON MAP TURTLE		U		G5	S3
HALLIAETUS LEUCOCEPHALUS	BALD EAGLE	LT	E		G4	S1B, S2N
LYNX RUFUS	BOBCAT		E		G5	S3
MELANERPES ERYTHROCEPHALUS	RED-HEADED WOODPECKER		T/T		G5	S2B, S2N
PASSERCULUS SANDWICHENSIS	SAVANNAH SPARROW		T/T		G5	S2B, S4N
PETROCHELIDON PYRRHONOTA	CLIFF SWALLOW		S/S		G5	S2B
PODILYMBUS PODICEPS	PIED-BILLED GREBE		E/S		G5	S1B, S3N
POECETES GRAMINEUS	VESPER SPARROW		E		G5	S1B, S2N
STRIX VARIA	BARRED OWL		T/T		G5	S3B
BETULA PUMILA - TOXICODENDRON	SHRUB CARR				G2G3	S2S3
VERNIX - DASIPHORA FRUITICOSA						
SPP. FLORIBUNDA SHRUBELAND						

\*\*\* Vertebrates

\*\* Ecosystems



27 JUN 2002

WARREN COUNTY  
RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN  
THE NEW JERSEY NATURAL HERITAGE DATABASE

NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK
BLACK SPRUCE SWAMP	BLACK SPRUCE SWAMP					
BOLTONIA ASTEROIDES VAR	ASTER-LIKE BOLTONIA -				G4	S1
ASTEROIDES - ASTER RACEMOSUS	SMALL-HEADED ASTER - FIELD				G1G2	S1S2
- MENTHA ARVENSIS HERBACEOUS VEGETATION	MINT HERBACEOUS VEGETATION					
CALCAREOUS FEN	LIMESTONE FEN				G3?	S1
CALCAREOUS SEEPAGE SWAMP	CALCAREOUS SEEPAGE SWAMP				G4?	S2S3
CAVE AQUATIC COMMUNITY	CAVE AQUATIC COMMUNITY				G4?	S2
CAVE TERRESTRIAL COMMUNITY	CAVE TERRESTRIAL COMMUNITY				G4?	S3
CORNUS AMOMUM - SALIX CANDIDA / DASIPHORA FRUITICOSA SPP.	CALCAREOUS FEN				G3?	S2S3
FLORIBUNDA / CAREX STRICTA SHRUBLAND						
DRY-MESIC CALCAREOUS FOREST	DRY-MESIC CALCAREOUS FOREST				G3G4?	S2?
JUNIPERUS VIRGINIANA / DASIPHORA FRUITICOSA SPP.	TURFY JUNIPER FEN (PASTURE FEN)				G1G2	S1S2
FLORIBUNDA / CAREX FLAVA - CAREX TETANICA SHRUB HERBACEOUS VEGETATION						
MORELLA PENNSYLVANICA - DASIPHORA FRUITICOSA SPP.	MARL SEEP FEN				G2	S2
FLORIBUNDA SHRUB HERBACEOUS VEGETATION						
SCHOENOPLECTUS (TABERNAMONTANI, ACUTUS)	BULRUSH DEEPWATER MARSH				G?	S2S4
EASTERN HERBACEOUS VEGETATION						
SHALE CLIFF/ROCK OUTCROP COMMUNITY	SHALE CLIFF/ROCK OUTCROP COMMUNITY				G3	S2?
TALUS SLOPE COMMUNITY	TALUS SLOPE COMMUNITY				G4?	S2S3

\*\*\* Invertebrates

WARREN COUNTY  
RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN  
THE NEW JERSEY NATURAL HERITAGE DATABASE

NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	CRANK	SRANK
AESHNA TUBERCULIFERA	BLACK-TIPPED DARNER				G4	S1S2
ALASMIDONTA HETERODON	DWARF WEDEMUSSEL	LE	E		G1G2	S1
ALASMIDONTA UNDULATA	TRIANGLE FLOATER		T		G4	S3
ALASMIDONTA VARIICOSA	BROOK FLOATER		E		G3	S1
ANAX LONGIPES	COMET DARNER				G5	S2S3
CALEPHELIIS BOREALIS	NORTHERN METALMARK				G3G4	S2S3
CHLOSZYNE NYCTEIS	SILVERY CHECKERSPOT				G5	SH
CICINDELA MARGINIPENNIS	COBBLESTONE TIGER BEETLE				G2G3	S1
CORDULEGASTER ERRONEA	TIGER SPIKETAIL				G4	S2
ENALLAGMA BASIDENS	DOUBLE-STRIPED BLUET				G5	S3
ENALLAGMA CYATHIGERUM	NORTHERN BLUET				G5	S2
ENODIA ANTHEDON	NORTHERN PEARLY EYE				G5	S3S4
ERYTHROECTIA HERARDI	HERARD'S NOCTUID MOTH				GU	SH
GOMPHUS SEPTIMA	CLUBTAIL DRAGONFLY				G2	S1
HYDRAECIA STRAMENTOSA	A NOCTUID MOTH				G4	SU
LAMPYLIS CARIOSA	YELLOW LAMPMUSSEL		T		G3G4	S1
LASMIGONA SUBVIRIDIS	GREEN FLOATER		E		G3	S1
LESTES EURINUS	AMBER-WINGED SPREADING				G4	S2
LEUCORRHINIA HUDSONICA	HUDSONIAN WHITEFACE				G5	S1
MACROCHILLO HYPOCKRITALIS	A NOCTUID MOTH				G4	S3S4
NEOTIMPHA MITCHELLII	MITCHELL'S SATYR	LE	E		G1G2T1T2	SH
MITCHELLII						
NEUROCORDULIA OBSOLETA	UMBER SHADOWDRAGON				G4	S1
PAPAPEMA APPASSIONATA	PITCHER PLANT BORER MOTH				G4	S2S3
PAPAPEMA ASTUTA	A NOCTUID MOTH				G3G4	SU
PAPAPEMA CERINA	GOLDEN BORER				G4	SH
PAPAPEMA NECOPINA	SUNFLOWER BORER MOTH				G4?	SH
PAPAPEMA SCIATA	CULVERS ROOT BORER				G3G4	SH
PIERIS VIRGINIENSIS	WEST VIRGINIA WHITE				G3G4	SH
PYRGUS WYANDOT	SOUTHERN GRIZZLED SKIPPER		E		G2	SH

27 JUN 2002

WARREN COUNTY  
RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN  
THE NEW JERSEY NATURAL HERITAGE DATABASE

NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK
SATYRIUM ACADICUM	ACADIAN HAIRSTREAK				G5	S2S3
SOMATOCHLORA LINEARIS	MOCHA EMERALD				G5	S2
SOMATOCHLORA WALSHII	BRUSH-TIPPED EMERALD				G5	S1S2
STYLORUS SPINICEPS	ARROW CLUBTAIL				G5	S2
BAT HIBERNACULUM	BAT HIBERNACULUM				G7	S2
ADLUMIA FUNGOSA	CLIMBING FUMITORY				G4	S2
AGASTACHE NEPETOIDES	YELLOW GIANT-HYSSOP				G5	S2
AGASTACHE SCROPHULARIIFOLIA	PURPLE GIANT-HYSSOP				G4	S2
AGRIMONIA MICROCARPA	SMALL-FRUIT GROOVEBURR				G5	S2
ALISMA TRIVIALE	LARGE WATER-PLANTAIN		E		G5	S1
AMELANCHIER HUMILIS	LOW SERVICE-BERRY				G5	S1
ANGELICA VENENOSA	HAIRY ANGELICA				G5	S2
APLECTRUM HYEMALE	PUTTYROOT		E		G5	S1
ARABIS HIRSUTA VAR PYCNOCARPA	WESTERN HAIRY ROCKCRESS				G5T5	S2
ARCEUTHOBIMUM FUSILLUM	DWARF MISTLETOE		E		G5	S1
ARENARIA STRICTA	ROCK SANDWORT		E		G5T5	SH
ARMORACIA LACUSTRIS	LAKE WATER-CRESS		E		G4?	SH
ASCLEPIAS VERTICILLATA	WHORLED MILKWEED		E		G5	S2
ASPLENIUM MONTANUM	MOUNTAIN SPLEENWORT				G5	S2
ASTER PRENANTHOIDES	CROOKED-STEM ASTER				G4G5	S2
ASTER TRADESCANTII	TRADESCANT'S ASTER				G4Q	S2
ATHYRIUM PYCNOCARPON	GLADE FERN				G5	S1
BOLTONIA ASTEROIDES VAR ASTEROIDES	ASTER-LIKE BOLTONIA		E		G5T4T5	S2
BOTRYCHIUM MULTIFIDUM	LEATHERY GRAPE FERN		E		G5	S1

\*\*\* Other types

\*\*\* Vascular plants

## WARREN COUNTY

RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN  
THE NEW JERSEY NATURAL HERITAGE DATABASE

NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK
BOTRYCHUM SIMPLEX VAR SIMPLEX	LEAST MOONWORT				G5T5	S1.1
BOUTELOUA CURTIPENDULA	SIDE-OATS GRAMA GRASS		E		G5T5	S1
CACALIA ATRIPLICIFOLIA	PALE INDIAN PLANTAIN		E		G4G5	S1
CALLITRICHE PALUSTRIS	MARSH WATER-STARWORT				G5	S2
CALYSTEGIA SPITHAMEA	ERECT BINDWEED		E		G4G5T4T5	S1
CARDAMINE ROTUNDIFOLIA	ROUND-LEAF BITTERCRESS		E		G4	S1
CAREX ALBURSINA	WHITE BEAR LAKE SEDGE		E		G5	S1
CAREX ALOPECOIDEA	FOXTAIL SEDGE		E		G5	S1
CAREX AQUATILIS	WATER SEDGE		E		G5	S1
CAREX CRAWEI	CRAWE'S SEDGE		E		G5	S1
CAREX CRAWFORDII	CRAWFORD'S SEDGE		E		G5	S1
CAREX EBURNEA	EBONY SEDGE				G5	S2
CAREX FRANKII	FRANK'S SEDGE				G5	S2
CAREX HAYDENII	CLOUD SEDGE				G5	S3
CAREX HITCHCOCKIANA	HITCHCOCK'S SEDGE		E		G5	S1
CAREX JAMESII	JAMES' SEDGE				G5	S2
CAREX LEPTONERVIA	FINE-NERVE SEDGE		E		G5	S1
CAREX OLIGOCARPA	FEW-FRUIT SEDGE		E		G4	S1
CAREX PLANTAGINEA	PLANTAIN-LEAF SEDGE		E		G4	S1
CAREX POLYMORPHA	VARIABLE SEDGE		E		G5	S1.1
CAREX PSEUDOCYPERUS	CYPERUS-LIKE SEDGE		E		G3	S1
CAREX RETROSA	RETROSE SEDGE		E		G5	S1
CAREX SICCATA	HILLSIDE SEDGE				G5	S2
CAREX STERILIS	DIOECIOUS SEDGE		E		G5	S1
CAREX TUCKERMANII	TUCKERMAN'S SEDGE				G4	S2
CAREX UTRICULATA	BOTTLE-SHAPED SEDGE		E		G4	S1
CAREX VIRIDULA SSP VIRIDULA	GREEN SEDGE				G5	S2
CASTILLEJA COCCINEA	SCARLET INDIAN-PAINTBRUSH				G5T5	S2
CHEILANTHES LANOSA	HAIRY LIPPERN				G5	S2

27 JUN 2002

WARREN COUNTY  
RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN  
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NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK
CHENOPODIUM SIMPLEX	MAPLE-LEAF GOOSEFOOT				G5	S2
CLEMATIS OCCIDENTALIS VAR OCCIDENTALIS	PURPLE CLEMATIS				G5T5	S2
COELOGLOSSUM VIRIDE VAR VIRESCENS	LONG-BRACT GREEN ORCHID				G5T5	S2
CONIOSELINUM CHINENSE	HEMLOCK-PARSLEY		E		G5	S1
CORNUS AMOMUM VAR SCHUETZEANA	PALE DOGWOOD		E		G5T5	S1
CORNUS CANADENSIS	BUNCHBERRY				G5	S2
CRATAEGUS CALPODENDRON	PEAR HAWTHORN		E		G5	S1
CRATAEGUS CHRYSOCARPA VAR CHRYSOCARPA	FIREBERRY HAWTHORN				G5T7	S1
CRATAEGUS DODGEI	DODGE'S HAWTHORN				G4	S2
CRATAEGUS SUCCULENTA	FLESHY HAWTHORN		E		G5	S1
CUSCUTA CESPHALANTHI	BUTTONBUSH DODDER		E		G5	S1
CUSCUTA POLYGONORUM	SMARTWEED DODDER				G5	S2
CYPRIPEDIUM CANDIDUM	SMALL WHITE LADY'S-SLIPPER		E		G4	S1
CYPRIPEDIUM REGINAE	SHOWY LADY'S-SLIPPER		E		G4	S1
DICENTRA EXIMIA	WILD BLEEDING-HEART		E		G4	SH.1
DIRCA PALUSTRIS	LEATHERWOOD				G4	S2
DOELLINGERIA INFIRMA	CORNEL-LEAF ASTER				G5	S2
ELEOCHARIS COMPRESSA	FLAT-STEM SPIKE-RUSH		E		G4	S1
ELEOCHARIS PAUCIFLORA	FEN-FLOWER SPIKE-RUSH		E		G5	S1
ELEOCHARIS QUADRANGULATA	ANGLED SPIKE-RUSH				G4	S2
EQUISETUM VARIEGATUM	VARIEGATED HORSETAIL		E		G5T5	S1
ERAGROSTIS FRANKII	FRANK'S LOVE GRASS				G5	S2
ERIOPHORUM GRACILE	SLENDER COTTON-GRASS		E		G5T7	SH
EUONYMUS ATROPURPUREA VAR ATROPURPUREA	WAHOO				G5T5	S1
EUPATORIUM ALTISSIMUM	TALL BONESET				G5	S2
GALIUM LABRADORICUM	LABRADOR MARSH BEDSTRAW		E		G5	S1

## WARREN COUNTY

RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN  
THE NEW JERSEY NATURAL HERITAGE DATABASE

NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SEANK
GALLIUM PALUSTRE	MARSH BEDSTREAM				G5	S3
GALLIUM TRIFIDUM	SMALL BEDSTREAM		E		G5T5	S1
GENTIANELLA QUINQUEFOLIA VAR QUINQUEFOLIA	STIFF GENTIAN				G5T4T5	S2
GEUM VERNUM	SPRING AVENS				G5	S2
GLYCERIA GRANDIS	AMERICAN MANNA GRASS		E		G5T5	S2
GOODYERA TESSELATEDA	CHECKERED RATTLESNAKE-PLANTAIN		E		G5	SH.1
HYBANTHUS CONCOLOR	GREEN VIOLET		E		G5	S1
HYDROPHYLLUM CANADENSE	BROAD-LEAF WATERLEAF		E		G5	S1
HYPERICUM MAJUS	LARGER CANADIAN ST. JOHN'S WORT		E		G5	S1
HYPERICUM PROLIFICUM	SHRUBBY ST. JOHN'S-WORT		E		G5	S1
HYPERICUM PYRAMIDATUM	GREAT ST. JOHN'S-WORT				G4	S3
ILEX MONTANA	LARGE-LEAF HOLLY		E		G5	S1
ISANTHUS BRACHIATUS	FALSE PENNYROYAL		E		G4G5	S1
ISOETES TUCKERMANII	TUCKERMAN'S QUILLWORT		E		G4?	SH.1
KALMIA POLIFOLIA	PALE-LAUREL		E		G5	S1
KUERNIA EUPATORIODES	FALSE BONESET		E		G5T5	S1
LATHYRUS VENOSUS	VEINY VETCHLING		E		G5	SH
LEMNA TRISULCA	STAR DUCKWEED				G5	S3
LILIUM PHILADELPHICUM VAR PHILADELPHICUM	WOOD LILY				G5T4T5	S3
LINNAEA BOREALIS	TWINFLOWER		E		G5T5	SH
LOBELIA DORTMANNIA	WATER LOBELIA		E		G4	SH
MAIANTHEMUM CANADENSE VAR INTERIUS	WESTERN FALSE LILY-OF-THE-VALLEY		E		G5T4	S1.1
MIMULUS MOSCHATUS VAR MOSCHATUS	MUSKFLOWER				G4G5T?	S2
MONARDA DIDYMA	OSWEGO-TEA				G5	S2
MUHLBERGIA GLOMERATA	EASTERN SMOKE GRASS				G5	S2



27 JUN 2002

WARREN COUNTY  
RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN  
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NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK
NUPHAR MICROPHYLLUM	SMALL YELLOW POND-LILY		E		G5T4T5	SH
ORTHILIA SECUNDA	SIDEBELLS				G5	S2
ORYZOPSIS ASPERIFOLIA	WHITE-GRAINED MOUNTAIN-RICE		E		G5	S1
	GRASS					
PANICUM FLEXILE	WIRY PANIC GRASS		E		G5	S1
PHLEGOPTERIS CONNECTILIS	NORTHERN BEECH FERN				G5	S2
PHLOX PILOSA	DOWNY PHLOX		E		G5T5	SH
PICEA RUBENS	RED SPRUCE		E		G5	S1
PLATANOTHERA CILIARIS	YELLOW FRINGED ORCHID			LP	G5	S2
PLATANOTHERA FLAVA VAR HERBIOLA	TUBERCLED REIN ORCHID				G4T4Q	S2
PLATANOTHERA HOOKERI	HOOKER'S ORCHID		E		G5	S1
POA LANGUIDA	DROOPING SPEAR GRASS				G3G4Q	S2
POLEMONIUM VANBRUNTIAE	JACOB'S LADDER				G3	SX.1
POLYGALA SENECA	SENECA SNAKEROOT		E		G4G5	S1.1
POTAMOGETON ALPINUS	NORTHERN PONDWEED		E		G5	S1
POTAMOGETON VAGINATUS	SHEATHED PONDWEED				G5	SH
POTAMOGETON ZOSTERIFORMIS	EEL-GRASS PONDWEED		E		G5	S1
POTENTILLA PALUSTRIS	MARSH CINQUEFOIL		E		G5	S1
PRUNUS PUMILA VAR DEPRESSA	LOW SAND CHERRY				G5T5	S2
RANUNCULUS FLABELLARIIS	YELLOW WATER BUTTERCUP				G5	S3
RANUNCULUS LONGIROSTRIS	LONG-BEAK WATER BUTTERCUP				G5	S2
RANUNCULUS REPTANS	CREeping SPEARWORT		E		G5T5	SH
RANUNCULUS TRICHOPHYLLUS VAR TRICHOPHYLLUS	THREAD-LEAF WATER BUTTERCUP				G5T5	S2
RHODODENDRON CANADENSE	RHODORA		E		G5	S1
RHYNCHOSPORA CAPILLACEA	CAPILLARY BEAKED-RUSH		E		G4G5	S1
RUBUS CANADENSIS	SMOOTH BLACKBERRY		E		G5	S1
SAGITTARIA CUNEATA	ARUM-LEAF ARROWHEAD		E		G5	S1
SALIX PEDICELLARIS	BOG WILLOW		E		G5	S1

WARREN COUNTY  
RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN  
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NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK
SANICULA TRIFOLIATA	LARGE-FRUIT BLACK-SNAKEROOT		E		G4	S1
SCHOENOPECTUS ACUTUS VAR ACUTUS	HARD-STEM BULRUSH				G5	S3
SCIRPUS MICROCARPUS	BARBERPOLE BULRUSH		E		G5	S1
SCLERIA PAUCIFLORA VAR PAUCIFLORA	PAPILLOSE NUT-RUSH				G5T7	S1
SCLERIA VERTICILLATA	WHORLED NUT-RUSH		E		G5	S1
SCUTELLARIA NERVOSA	VEINED SKULLCAP		E		G5	S2
SISYRINCHIUM MONTANUM	STRICT BLUE-EYED GRASS		E		G5T4	S2
SOLIDAGO RIGIDA	PRAIRIE GOLDENROD		E		G5T5	S1
SPARGANIUM MINIMUM	SMALL BURR-REED		E		G5	S1
SPHENOPHOLIS PENNSYLVANICA	SWAMP OATS				G4	S2
SPITRANTHES LUCIDA	SHINING LADIES'-TRESSES				G5	S2
SPITRANTHES OCHROLEUCA	YELLOWISH NODDING LADIES'-TRESSES				G4	S3
SPOROBOLUS COMPOSITUS VAR COMPOSITUS	LONG-LEAF RUSH-GRASS				G5T5	S2
SPOROBOLUS NEGLECTUS	SMALL RUSH-GRASS		E		G5	S1
STREPTOPUS AMPLEXIFOLIUS	WHITE TWISTED-STALK		E		G5T5	S1
TAXUS CANADENSIS	AMERICAN YEW				G5	S2
TIARELLA CORDIFOLIA	FOAMFLOWER		E		G5T5	S1
TRIADENUM FRASERI	FRASER'S ST. JOHN'S-WORT				G4G5	S3
TRICHOMANES INTRICATUM	WEFT FERN		E		G3G4	S1.1
TROLLIUS LAXUS SSP LAXUS	SPREADING GLOBE FLOWER		E		G4T3	S1
UTRICULARIA MINOR	LESSER BLADDERWORT		E		G5	S1
VACCINIUM OXYCCOCOS	SMALL CRANBERRY				G5	S2
VERBENA SIMPLEX	NARROW-LEAF VERVAIN		E		G5	S1
VERONICA CATENATA	SESSILE WATER-SPEEDWELL		E		G5	S1
VICIA AMERICANA VAR AMERICANA	AMERICAN PURPLE VETCH				G5T5	S2
VICIA CAROLINIANA	CAROLINA WOOD VETCH		E		G5	S1



**United States Department of the Interior**  
**FISH AND WILDLIFE SERVICE**

New Jersey Field Office  
Ecological Service  
927 North Main Street, Building D  
Pleasantville, New Jersey 08232  
Tel: 609-646-9310  
Fax: 609-646-0352  
<http://njfieldoffice.fws.gov>



IN REPLY REFER TO:  
ES-04/311

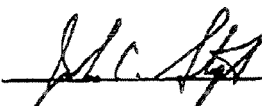
Diana G. Loya, Environmental Scientist  
ENSR International  
20 New England Avenue  
Piscataway, New Jersey 08854  
Fax Number: (732) 981-0116

Reference: Threatened and endangered species review within the vicinity of Ingersoll-Rand Company property, ENSR # 03710-162 located within Phillipsburg, Warren County, New Jersey.

The U.S. Fish and Wildlife Service (Service) has reviewed the above-referenced proposed project pursuant to Section 7 of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of federally listed endangered and threatened species. The following comments do not address all Service concerns for fish and wildlife resources and do not preclude separate review and comment by the Service as afforded by other applicable environmental legislation.

Except for an occasional transient bald eagle (*Haliaeetus leucocephalus*), no other federally listed or proposed endangered or threatened flora or fauna under Service jurisdiction are known to occur within the vicinity of the proposed project site. Therefore, no further consultation pursuant to Section 7 of the Endangered Species Act is required by the Service. This determination is based on the best available information. If additional information on federally listed species becomes available, or if project plans change, this determination may be reconsidered. Please be aware that this determination is valid for 90 days; therefore, if the project is not initiated within this time, the Service should be contacted prior to project implementation to verify the accuracy of this information. The Service will review current information to ensure that no federally listed threatened or endangered species will be adversely affected by the proposed project.

Enclosed is current information regarding federally listed and candidate species occurring in New Jersey. The Service encourages federal agencies and other planners to consider candidate species in project planning. The addresses of State agencies that may be contacted for current site-specific information regarding federal candidate and State-listed species are also enclosed.

Authorizing Supervisor: 

Enclosures: Current summaries of federally listed and candidate species in New Jersey  
Addresses for additional information on candidate and State-listed species

Sect 7 (es-NEeor7.fax) 11/24/03



## FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN NEW JERSEY



An **ENDANGERED** species is any species that is in danger of extinction throughout all or a significant portion of its range.

A **THREATENED** species is any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

	COMMON NAME	SCIENTIFIC NAME	STATUS
<b>FISHES</b>	Shortnose Sturgeon	<i>Acipenser brevirostrum</i>	E
<b>REPTILES</b>	Box Turtle	<i>Clemmys muhlenbergii</i>	T
	Atlantic Gopher Turtle	<i>Lepidochelys kempii</i>	E
	Green Turtle	<i>Chelonia mydas</i>	T
	Hawksbill Turtle	<i>Eretmochelys imbricata</i>	E
	Leatherback Turtle	<i>Dermochelys coriacea</i>	E
	Florida Manatee	<i>Caretta caretta</i>	T
<b>BIRDS</b>	Bald Eagle	<i>Haliaeetus leucocephalus</i>	T
	Piping Plover	<i>Charadrius melodus</i>	T
	Roseate Spoonbill	<i>Sterna dougallii dougallii</i>	E
<b>MAMMALS</b>	Eastern Cougar	<i>Felis concolor couguar</i>	E+
	Indiana Bat	<i>Myotis sodalis</i>	E
	Gray Wolf	<i>Canis lupus</i>	E+
	Florida Scrub Jay	<i>Sciurus niger cinereus</i>	E+
	Blue Whale	<i>Balaenoptera musculus</i>	E
	Finback Whale	<i>Balaenoptera physalus</i>	E
	Humpback Whale	<i>Megaptera novaeangliae</i>	E
	Right Whale	<i>Balaena glacialis</i>	E
	Beluga Whale	<i>Balaenoptera borealis</i>	E
	Spiny Whale	<i>Physeter macrocephalus</i>	E

	COMMON NAME	SCIENTIFIC NAME	STATUS
INVERTEBRATES	Dwarf wedgemussel	<i>Alasmodonta heterodon</i>	E
	Northeastern beach tiger beetle	<i>Cicindela dorsalis dorsalis</i>	T
	Mitchell's eye butterfly	<i>Neonympha m. mitchelli</i>	E+
	American burying beetle	<i>Nicrophorus americanus</i>	E+
PLANTS	Small whorled pogonia	<i>Isotria medeoloides</i>	T
	Swamp pink	<i>Helonias bullata</i>	T
	Kentucky broken-bough	<i>Rhynchospora knieskernii</i>	T
	American orchid	<i>Schwalbea americana</i>	E
	Sensitive plant	<i>Aeschynomene virginica</i>	T
	Sea purslane	<i>Amaranthus pumilus</i>	T

STATUS			
E	endangered species	PE	proposed endangered
T	threatened species	PT	proposed threatened
+	presumed extirpated**		

\* Except for sea turtle nesting habitat, principal responsibility for these species is vested with the National Marine Fisheries Service.

\*\* Current records indicate the species does not presently occur in New Jersey, although the species did occur in the State historically.

Note: for a complete listing of Endangered and Threatened Wildlife and Plants, refer to 50 CFR 17.11 and 17.12.

For further information, please contact:

U.S. Fish and Wildlife Service  
New Jersey Field Office  
927 N. Main Street, Building D  
Pleasantville, New Jersey 08232  
Phone: (609) 646-9310  
Fax: (609) 646-0352

Revised 12/06/00



## FEDERAL CANDIDATE SPECIES IN NEW JERSEY

**CANDIDATE SPECIES** are species that appear to warrant consideration for addition to the federal List of Endangered and Threatened Wildlife and Plants. Although these species receive no substantive or procedural protection under the Endangered Species Act, the U.S. Fish and Wildlife Service encourages federal agencies and other planners to give consideration to these species in the environmental planning process.

SPECIES	SCIENTIFIC NAME
Bog asphodel	<i>Narthecium americanum</i>
Hirst's panic grass	<i>Panicum hirstii</i>

**Note:** For complete listings of taxa under review as candidate species, refer to Federal Register Vol. 64, No. 205, October 25, 1999 (Endangered and Threatened Wildlife and Plants; Review of Plant and Animal Taxa that are Candidates for Listing as Endangered or Threatened Species).



## FEDERAL CANDIDATE AND STATE-LISTED SPECIES

Candidate species are species under consideration by the U.S. Fish and Wildlife Service (Service) for possible inclusion on the List of Endangered and Threatened Wildlife and Plants. Although these species receive no substantive or procedural protection under the Endangered Species Act, the Service encourages federal agencies and other planners to consider federal candidate species in project planning.

The New Jersey Natural Heritage Program maintains the most up-to-date information on federal candidate species and State-listed species in New Jersey and may be contacted at the following address:

Coordinator  
Natural Heritage Program  
Division of Parks and Forestry  
P.O. Box 404  
Trenton, New Jersey 08625  
(609) 984-0097

Additionally, information on New Jersey's State-listed wildlife species may be obtained from the following office:

Dr. Larry Niles  
Endangered and Nongame Species Program  
Division of Fish and Wildlife  
P.O. Box 400  
Trenton, New Jersey 08625  
(609) 292-9400

If information from either of the aforementioned sources reveals the presence of any federal candidate species within a project area, the Service should be contacted to ensure that these species are not adversely affected by project activities.



ENSR International

20 New England Avenue  
Piscataway, NJ 08854  
Phone: (732) 981-0200  
Fax: (732) 981-0116  
[www.ensr.com](http://www.ensr.com)

June 28, 2004

Office of Natural Lands Management  
Natural Heritage Program  
PO Box 404  
22 South Clinton Avenue  
Trenton, NJ 08625-0404

**RE: Ingersoll-Rand Company  
Baseline Ecological Evaluation  
942 Memorial Parkway  
Phillipsburg, Warren County, NJ  
Threatened and Endangered Species Consultation/Clearance**

**ENSR Project Number 03710-162**

Dear Natural Heritage Program:

ENSR is conducting a Baseline Ecological Evaluation at a site in Phillipsburg, New Jersey. The approximate limits of this site are depicted on the enclosed Site Location Map (USGS 7.5' Topographic Quadrangle – Easton, NJ-PA).

This request specifically addresses the requirement for documented consultation in regard to compliance with the Endangered Species Act of 1973 under certain federal permits. We request consultation from your office regarding the occurrence of any threatened and/or endangered species, or species of concern and/or their critical habitats, within a quarter mile radius of the project site. The completed data request form is enclosed for your review.

Thank you for your anticipated attention regarding this matter. Please contact me directly at (732) 981-0200 if you have any questions or require additional information.

Sincerely,

A handwritten signature in black ink that reads "Diana G. Loya". The signature is fluid and cursive, with the first name "Diana" being the most prominent.

Diana G. Loya  
Environmental Scientist



June 28, 2004  
Page 2

Enclosures:  
USGS Location Map  
Natural Heritage Data Request Form

cc: Gregg Micalizio – ENSR  
File: 03710-162-314

# Natural Heritage Data Request Form

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This form is used to request a search of the Natural Heritage Database for records of rare or endangered species and natural communities on or near a project site. The Natural Heritage Program provides the information in order to assist the requestor in preserving habitat for rare and endangered species and natural communities.

To initiate a search, please provide:

- A) A letter explaining the project; B) A copy of a USGS quad map(s) delineating the bounds of the project site; C) A completed data request form.

Send completed request to:

Office of Natural Lands Management  
Natural Heritage Program  
PO Box 404  
22 South Clinton Avenue  
Trenton, NJ 08625-0404.

---

NAME Diana G. Loya

AGENCY ENSR

ADDRESS 20 New England Avenue, Piscataway, NJ 08854

PHONE 732-981-0200

PROJECT OR SITE NAME

Ingersoll-Rand Company 942 Memorial Parkway, Phillipsburg, NJ 08865

County (check those that apply):

Atlantic ☐ Bergen ☐ Burlington ☐ Camden ☐ Cape May ☐ Cumberland ☐

Essex ☐ Gloucester ☐ Hudson ☐ Hunterdon ☐ Mercer ☐ Middlesex ☐ Monmouth ☐

Morris ☐ Ocean ☐ Passaic ☐ Salem ☐ Somerset ☐ Sussex ☐ Union ☐ Warren ☒

USGS QUAD(S): Any material supplied by the Office of Natural Lands Management will not be published without crediting the Natural Heritage Database as the source of the material. It is understood that there will be a charge of \$20.00 per hour for the services requested. An invoice will be sent with the request response and payment should be made by check or money order payable to "Office of Natural Lands Management."

Date Needed July 16, 2004 Signature \_\_\_\_\_

---

FOR OFFICE USE ONLY

DATE RECEIVED \_\_\_\_\_

Item Code: REG \_\_\_\_\_ ST \_\_\_\_\_ RTC \_\_\_\_\_ NC \_\_\_\_\_

REGEO \_\_\_\_\_ STEO \_\_\_\_\_ RTCEO \_\_\_\_\_ NCEO \_\_\_\_\_

Hrs: \_\_\_\_\_

Project Code: \_\_\_\_\_ Inv. #. \_\_\_\_\_

---

DPF-225 9/98



**Source:**  
USGS 7.5' Topographic  
Quadrangle - Easton, NJ-PA  
1954 - Photorevised 1981

**Client:**  
Ingersoll Rand Company  
**Design/Review:** GM/CV  
**Scale:** 1:24,000  
**Date:** 04/22/03

**Figure Title:**

**FIGURE 1**  
**USGS Site Location Map**  
Ingersoll-Rand - Phillipsburg, New Jersey

**Project No.:** 03710-156

**ENS**  
INTERNATIONAL





ENSR International

20 New England Avenue  
Piscataway, NJ 08854  
Phone: (732) 981-0200  
Fax: (732) 981-0116  
[www.ensr.com](http://www.ensr.com)

June 28, 2004

US Fish and Wildlife Service  
New Jersey Field Office  
927 N. Main Street, Bldg. D-1  
Pleasantville, NJ 08232

**RE: Ingersoll-Rand Company  
Baseline Ecological Evaluation  
942 Memorial Parkway  
Phillipsburg, Warren County, NJ  
Threatened and Endangered Species Consultation/Clearance**

**ENSR Project Number 03710-162**

Dear Sir/Madam:

ENSR is conducting a Baseline Ecological Evaluation as part of a Remedial Investigation at a site in Phillipsburg, New Jersey. The approximate limits of this site are depicted on the enclosed Site Location Map (USGS 7.5' Topographic Quadrangle – Easton, NJ-PA).

This request specifically addresses the requirement for documented consultation in regard to compliance with the Endangered Species Act of 1973 under certain federal permits. We request consultation from your office regarding the occurrence of any threatened and/or endangered species, or species of concern and/or their critical habitats, within a quarter mile radius of the project site. The completed data request form is enclosed for your review.

Thank you for your anticipated attention regarding this matter. Please contact me directly at (732) 981-0200 if you have any questions or require additional information.

Sincerely,

A handwritten signature in black ink that reads "Diana A. Loya". The signature is written in a cursive, flowing style.

Diana G. Loya  
Environmental Scientist



June 28, 2004  
Page 2

Enclosures:  
USGS Location Map

cc: Gregg Micalizio – ENSR  
File: 03710-162-314



**Source:**  
USGS 7.5' Topographic  
Quadrangle - Easton, NJ-PA  
1954 - Photorevised 1981

**Client:**  
Ingersoll Rand Company  
**Design/Review:** GM/CV  
**Scale:** 1:24,000  
**Date:** 04/22/03

**Figure Title:**

**FIGURE 1**  
**USGS Site Location Map**  
Ingersoll-Rand - Phillipsburg, New Jersey

**Project No.:** 03710-156

**ENS**  
INTERNATIONAL

## **APPENDIX C**

### **BASELINE ECOLOGICAL EVALUATION OF THE SOUTH-SIDE AREA INGERSOLL-RAND FACILITY (Not Included in electronic copy)**